PERTRAC | Analytical Platform

User Manual

part of the PERTRAC | Suite

Investment Management Solutions

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PerTrac Analytical Platform User Manual

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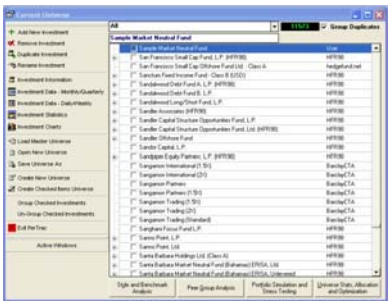
PerTrac Version 6.0.19 New Feature Summary

I. PerTrac ID/Investment Grouping: This feature addresses the issue of multiple records for the same investment when multiple databases from different investment data vendors are merged into a single, master database. Through rigorous qualitative and quantitative comparisons of databases from different data vendors, PerTrac can now identify investment records from different data sources that are actually the same investment. The user has the option of grouping duplicate investment records together so that only one record is shown for each unique investment in the Home/Current Universe window. The other duplicate record(s) for an investment are not deleted, but simply hidden in a tree format. The user can prioritize the various data sources used to create the merged database in order to determine which investment record will be the one displayed.

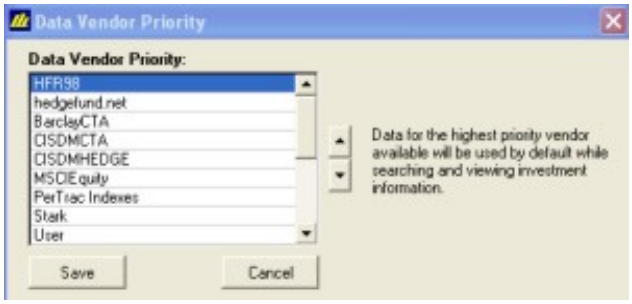
The PerTrac Home/Current Universe window also has a new look.



1. **Group Duplicates:** This is a new check box located on the upper right-hand side of the Home window. When **Group Duplicates** is checked, all investment records for the same fund will be grouped by way of a new tree format, located just to the left of the investment master names. Plus and minus signs will show or hide the duplicate records. When the **Group Duplicates** box is unchecked, all investment records will be listed in the Home window without the new tree structure. The black box containing the number of records in the Home window will change when the **Group Duplicates** box is checked. When unchecked, the total number of investment records, including all duplicates, will be shown. When checked, the black box will show the number of unique investments (excluding duplicates).

TIP: If your investment records are grouped, we have added a new drop-down box to the lower left corner of the Investment Information, Investment Statistics and Investment Data Monthly/Quarterly windows. The drop-down box will allow you to easily toggle between the duplicate records from different data sources for the currently displayed investment if your data is grouped.

2. **Configure Data Vendor Priority**: If you have multiple databases from different data vendors, and you wish to merge these databases and group duplicate investment records together, you will have to set a priority on which data vendors record will display for a duplicated investment. To set your data vendor priority, click **Preferences** on the upper menu bar. The first option is **Configure Data Vendor Priority**. Place the data source you wish to give highest priority at the top of the list, and on down so that the lowest priority source is at the bottom of the list. (Based on the example screen above, if PerTrac identified duplicate records for the same investment from Hedgefund.net and Stark, the record from Hedgefund.net would be displayed in the Home/Current Universe window if the Group Duplicates checkbox was checked. The record from Stark would be hidden by default.) This priority will also be used when creating universes with PerTracs new Search Builder search engine, which can automatically remove duplicate records from your results.



3. **Data Source Name:** In previous versions of PerTrac the data source name was shown in a box at the top of the Home window. Now the data source name is located to the right of the fund name.
4. **New universe selection drop-down menu:** Located at the top of the Home window is a new drop-down menu containing the various universes saved in your default universe folder. You can quickly switch the universe that is currently open with this menu.

II. New splash screen for PerTrac announcements

Welcome
Welcome!
PERTRAC Suite
Welcome to PerTrac Messages!
From here you will find helpful messages about new features, upgrades or future releases. From time to time this window will be displayed automatically to inform you of new messages. You can minimize PerTrac messages at any time, or you can browse through previous messages by selecting them in the drop down tool.
PerTrac Messages
Messages
#Daily Data Benchmark
All
10419
Aug-02-06 10:39 AM

There is a new **Messages** button located on the lower left side of the Home window. Clicking this button will launch the new splash screen. Here you will find messages about PerTrac releases, updates and other product news. To hide the splash screen, click **Messages** again.

III. Soft-key Licensing

PerTrac has started the transition from the physical hard-key (USB/Parallel Port dongle) license to an electronic soft-key license. Users who have a soft-key license no longer need to plug any special hardware into their computers to run PerTrac. (Note: This option is currently only available for the single user license. The network (concurrent) softkey license will be available in the near future. Your current hard-keys (USB/Parallel Port) will continue to work as well.) If you would like to take advantage of soft-key licensing please follow these steps:

1. Contact Amanda Sturgeon in the U.S. at 775-851-5880 ext 23. Once approved you will receive an email with your soft-key license number.
2. When you receive your 16 digit soft-key license number, complete the License Configuration form. To do so, click **Preferences** on the PerTrac upper menu bar. About half way down click **License Configuration.** The form shown to the right will open.

3. **Key Type:** Select Software Activation from the drop-down menu. Under **Software Activation Settings,** enter the Product Key (your 16 digit number), First Name, Last Name, Phone and Computer Description fields.
4. Click **Save Changes/Exit.**

Note: To configure specific proxy settings click **Configure Proxy Settings** on the lower left side of the window.

Once the **License Configuration** has been saved, a **Software License** form will be created, which is also located on the **Preferences** tab. This form serves two main purposes.

1. The new soft-key option requires an internet connection. The license will work for two weeks each time you open PerTrac. If you do not connect to the internet within two weeks the license will have to be reactivated. To reactivate your license you will have to phone PerTrac technical support at 775-851-5880 to be issued a 25 digit Activation Key number. Enter that number on this form in the Activation Key boxes. Once the number has been entered, click **Renew Activation**.
2. This form will also be used to release a license. In the past, if multiple users shared a license, the associated hard-key would have to be physically moved from computer to computer. The new soft-key allows the current user to release the license so that it can be activated by another user. To release your license, click **Release Activation**, at which point you will be logged out of PerTrac. If someone else is using the license, you will not have access to PerTrac until they release it.

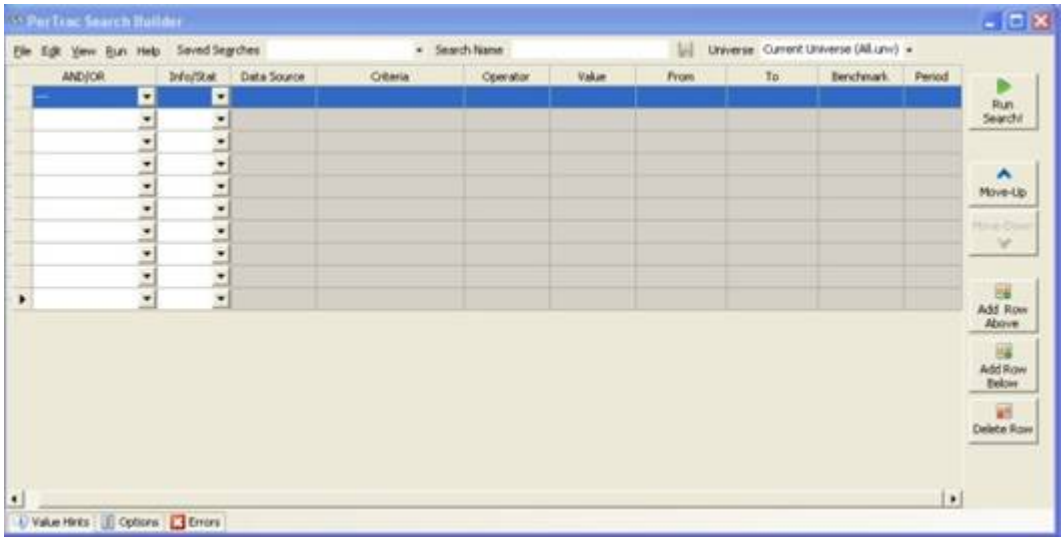
IV. Search Builder

Search Builder is a powerful new search engine that combines the current Information and Statistics search engines into a single search engine with the following features:

1. The ability to select qualitative and quantitative criteria in the same search.
2. The ability to search across multiple data sources in a database when selecting Information search criteria.
3. The option to automatically remove duplicate records from the resulting universe of investments when a search is completed.
4. The option to save your set of search criteria as a search file that can be used again later.

The new Search Builder search engine can be accessed three different ways from within PerTrac: (1) the **Search** button located at the top of the PerTrac

window; (2) the **Tools** menu in the menu bar; (3) the more familiar **Create New Universe** button at the left of the Home/Current Universe window. The **Create New Universe** window no longer contains the Select by Information Search or Select by Statistics Search buttons. They were replaced by the single Search Builder button. Either of these options will open the new **PerTrac Search Builder** window.

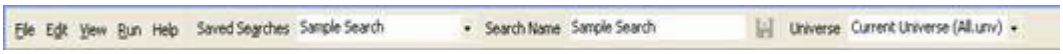


Search Builder Table Options

1. **And/Or:** These options control the logical order in which the search will be run.
2. **Info/Stat:** Select **Info** to choose from Investment Information search criteria, or **Stat** to choose from quantitative criteria.
3. **Data Source:** Allows you to select which data source to use when searching on information fields. (Different data sources contain somewhat different information fields; the information fields listed in the Criteria column will depend on which data source is chosen.) Multiple data sources can be included in a search by selecting different data sources on different rows in the Search Builder.
4. **Criteria:** This is where you will select the actual information or statistic field to be included in the search. (Note: The available statistics are currently the same as those available in the statistics search function of earlier versions of PerTrac. However, more statistical search criteria will be added in the future.) The available Info or Stats fields can be viewed either in one long alphabetically ordered list or grouped into various PerTrac categories.
5. **Operator:** Equals, does not equal, greater than, greater or equal to, less than, less than or equal to. Applies to both Info and Stat search criteria.

6. **Value:** The requested value entered by the user. Applies to both Info and Stat search criteria.
7. **From:** Enter the start date for the selected criteria. You can search **Start of Data** (Since Inception), or enter a Month/Year.
8. **To:** Enter the end date for the selected criteria. You can search, **End-Date Parameter** (a shortcut when running a saved search each month and you want the statistic run through the new month end date without having to change the end date each month), **End of Data** or enter a Month/Year.
9. **Benchmark:** This option applies when selecting correlation statistic criteria. When a correlation statistic has been selected under the **Criteria** column, the **Benchmark** column will light up for your benchmark selection. (Note: When you click the down arrow to select a benchmark, you will see a list of all your assigned benchmark universes. By default the Correl.unv is assigned to all funds in your database. If you have not assigned additonal benchmark universes to your funds, the Correl.unv will be the only listed universe to choose from).
10. **Period:** The period options are Monthly or Quarterly.

Search Builder Tool Bar Options

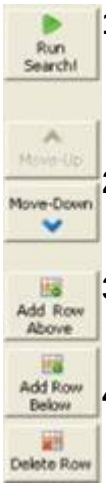


1. **File:** Contains options for starting a new search, saving and deleting searches, and resetting your search options.
2. **Edit:** Typical editing features used in spreadsheet applications: cut, copy, paste, insert rows, delete rows, clear contents in a row, move criteria up or down, and grouping functions to group your criteria based on And/Or logic.
3. **View:** Allows the user to view the Criteria lists by category or alphabetically, and to launch the **Value Hints**, **Options** or **Errors** tabs.
4. **Run:** Run a search or check for errors.
5. **Help:** Contains a brief document on how to start a search.
6. **Saved Searches:** This drop-down menu will contain a list of your saved searches. (Note: If you select search criteria, run the search, and then exit without saving, PerTrac will automatically save your search for you. When you click the down arrow saved files will be named Autosave1, Autosave2, etc.
7. **Search Name:** Use this field to name your search. Once a name has been entered, click the **Save** icon just to the right of the field.
8. **Universe:** This drop-down menu allows you to select the universe on which you will run your search. The list will include All.unv (the universe

containing all investments in the current database) as well as any universes saved in the Universe folder.

Search Builder Shortcut Options

These buttons appear at the right side of the Search Builder window.



1. Click **Run Search!** to run your search.

2. Click **Move-Up** to move the selected row up in the Search Builder table.

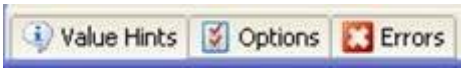
3. Click **Move-Down** to move the selected row down.

4. Click **Add Row Above** to insert a row above the highlighted row.

5. Click **Add Row Below** to insert a row below the highlighted row.

6. Click **Delete Row** to delete the highlighted row.

Value Hints, Options & Errors



These tabs appear at the bottom of the Search Button window. Information related to these tabs is displayed in the area just above them.

1. **Value Hints:** This option applies to statistical criteria and will display a definition of the selected statistic and hints related to values the user could enter for that statistic.
2. **Options:** There five available options.
    i. View Criteria By option to view your **Criteria** selection list by category or alphabetically.
    ii. Automatically Launch Search Report Window: This option will automatically launch the search report when the search is

complete. (Note: Depending on the size of your database, the search report could take some time to run. You may want to uncheck this box. You will always have the option to manually run the search report when your searches have run.)

iii. Use PerTrac ID Fund Groupings and Data Vendor Priority: This option when checked will result in a de-duplicated universe that contains only one record for each investment when you search is complete. In the case of duplicate records for an investment, PerTrac will choose which record to keep in the results universe based on your data vendor priority selected on the PerTrac **Preferences** tab.

iv. Optimize Search: This option when checked allows the search to process and evaluate criteria in the quickest order possible. If turned on, qualitative criteria will be evaluated before quantitative criteria regardless of the order listed in your search. When unchecked, your search will be run in the order you specify.

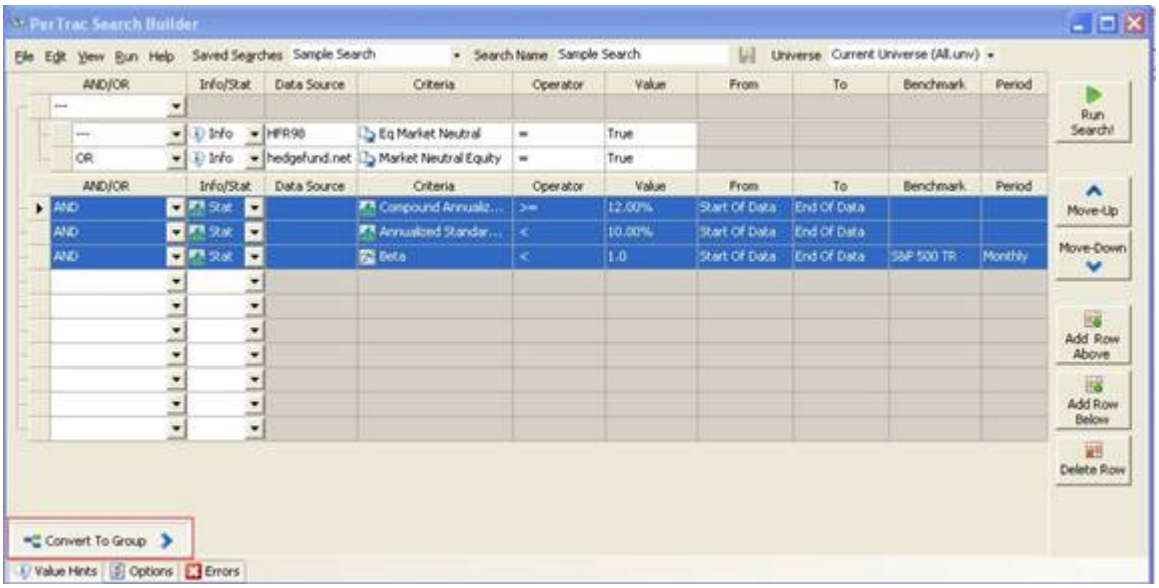
v. Force Search Criteria to Check All Criteria: This option when checked forces the search to find all specified criteria values for all investments. This is useful for creating reports. By default, which is unchecked, the search will process as few criteria as possible to determine if an investment passes or fails a search. For a given fund, depending on the logical structure of your search, PerTrac may not need to evaluate all criteria. (For example, if this option is unchecked and an investment fails the criterion specified in the first row of the Search Builder table and the criterion in the second row is linked by the **And** operator, PerTrac will not continue checking to see if the investment passes the criterion specified in the second row since an investment must pass both the first AND second criteria in order to make it into the results universe. This allows the search to run as quickly as possible.)

Note: The one option that all users will generally wish to have checked on a regular basis is the Use PerTrac ID Fund Groupings and Data Vendor Priority to produce search universes that contain no duplicate funds.

3. Errors: This tab will list any errors generated when running your search. Typically, the errors will refer to selected criteria values entered or the logical order of your search criteria.

Grouping (Nesting) Your Criteria

Search Builder allows for grouping your **And** statements or **Or** statements based on the logical order of your search criteria. For example, if you wanted to find all HFR market neutral funds **or** Hedgefund.net market neutral funds prior to running your **Stat** criteria, you would group together your **Info** criteria to find all market neutral funds first. See the screen below.



In addition, you could highlight the **Stat** criteria rows and click **Convert To Group** on the lower left to create a group of your **And** criteria.

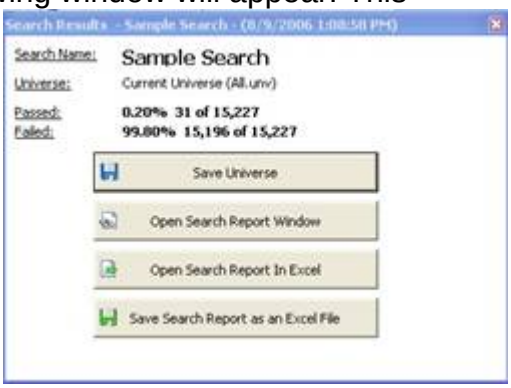
Note: You can group funds from the **Edit** button on the menu bar, by right-clicking on a row, or by way of the **Convert to Group** button that appears when you highlight rows.

TIP: It might be useful to first define all of your **Info** and **Stat** criteria, determine the logical order you want to run your search criteria, then group your **And/Or** statements.

Setting Up and Running a Search in Search Builder

1. Starting at the first row, click the down arrow under the **Info/Stat** column.
2. Click **Info** to select a qualitative criterion from the investment information pages, or **Stats** to select a quantitative criterion.

3. If you select **Info** you will then choose a **Data Source** and make selections under **Criteria**, **Operator** and **Value.**
4. If you select **Stats** you will then make selections under **Criteria**, **Operator**, **Value, From & To** (to set your date range), **Period** and possibly **Benchmark,** depending on the stat selected.
5. Enter a name for your search in the **Search Name** field at the top, then click **Save** next to that field.
6. Click **Run Search!**
7. When the search is complete the following window will appear. This window contains the name of your search; the universe on which the search was run; and the percent and number of funds that passed and failed the search. There are also four button options:



a) Save Universe: Opens the **Save As** window to your default universe folder.

b) Open Search Report Window: Search Builder generates three detailed search reports, each of which is discussed in the section below. This option, however, will open the reports in the Search Builder.

c) Open Search Report in Excel: This will export the search report and open it as an Excel spreadsheet.

d) Save Search Report as an Excel File: This option saves the report as an .xls file that can later be opened in Excel.

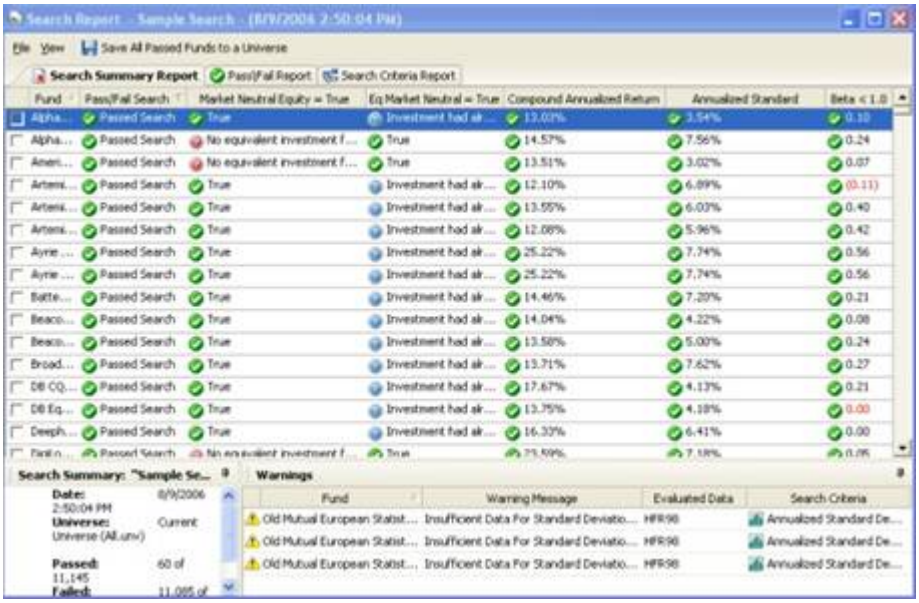
TIP:

Once you have created and saved your searches, you can access them quickly from the Home window upper toolbar. We have added a **Searches** drop-down menu. This will allow you to select a saved search, which will then automatically open the search window.

V. Search Reports

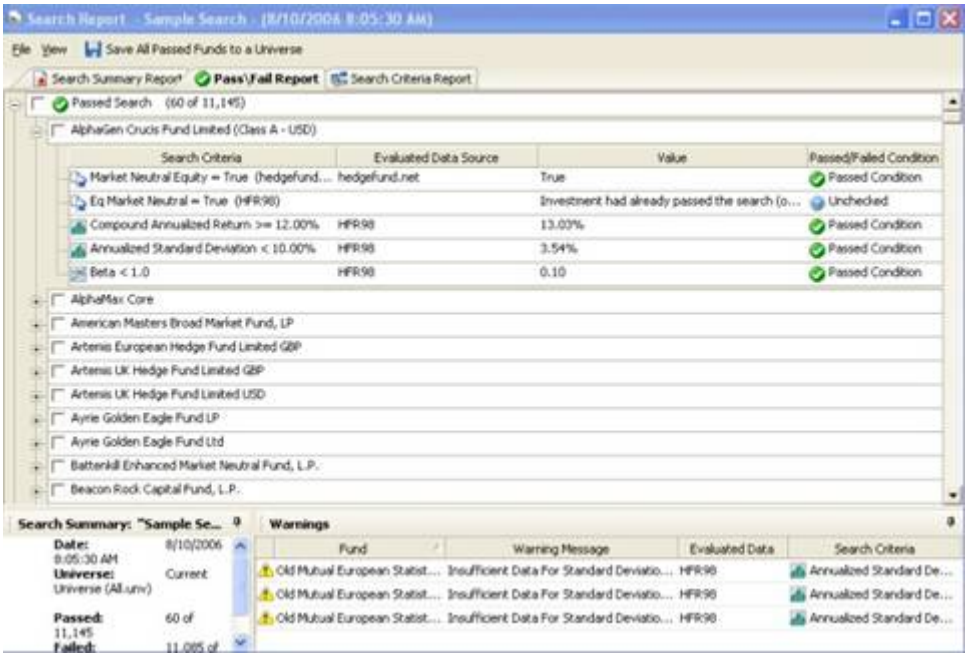
PerTrac Search Builder has the ability to generate three detailed search reports: Search Summary Report, Pass/Fail Report, and Search Criteria Report.

1. Search Summary Report:



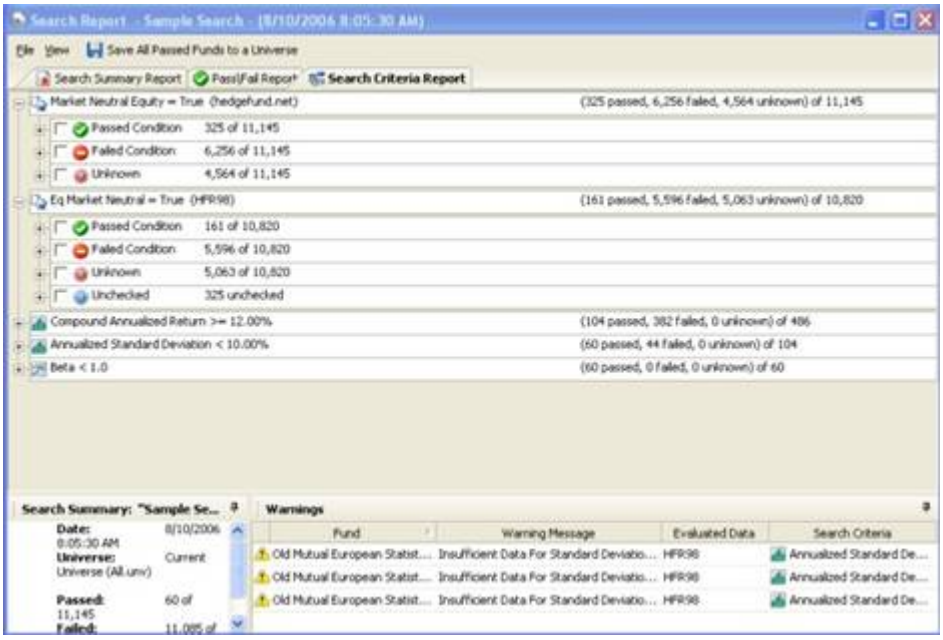
The **Search Summary Report** lists all funds in the universe on which your search was run. By default the report is sorted by the funds that passed your search criteria. In the lower left corner you will find a summary table indicating how many funds passed and failed. In this example the search was run on the All.unv universe (entire database) and resulted in 60 of 11,145 passed and 11,085 of 11,145 failed. This is a columnar report showing the search criteria as column labels and the values for all criteria for all investments. If the investment passed on a criterion, a green check mark icon appears next to the result for that criterion. If it failed on a criterion, a red X icon appears next to the result.

2. Pass\Fail Report:


Search Report - Sample Search - (8/10/2006 8:05:30 AM)
File View Save All Passed Funds to a Universe
Search Summary Report Pass\Fail Report Search Criteria Report
Passed Search (60 of 11,145)
AlphaGen Crucis Fund Limited (Class A - USD)
Search Criteria
Evaluated Data Source
Value
Passed/Failed Condition
Market Neutral Equity = True (hedgefund... hedgefund.net True Passed Condition
Eq Market Neutral = True (HFR98) Investment had already passed the search (o... Unchecked
Compound Annualized Return >= 12.00% HFR98 13.03% Passed Condition
Annualized Standard Deviation < 10.00% HFR98 3.54% Passed Condition
Beta < 1.0 HFR98 0.10 Passed Condition
AlphaMax Core
American Masters Broad Market Fund, LP
Artemis European Hedge Fund Limited GBP
Artemis UK Hedge Fund Limited GBP
Artemis UK Hedge Fund Limited USD
Ayrie Golden Eagle Fund LP
Ayrie Golden Eagle Fund Ltd
Battenkill Enhanced Market Neutral Fund, L.P.
Beacon Rock Capital Fund, L.P.
Search Summary: "Sample Se...
Date: 8/10/2006 8:05:30 AM
Universe: Current Universe (All.unv)
Passed: 60 of 11,145
Failed: 11,085 of
Warnings
Fund
Warning Message
Evaluated Data
Search Criteria
Old Mutual European Statist... Insufficient Data For Standard Deviatio... HFR98 Annualized Standard De...
Old Mutual European Statist... Insufficient Data For Standard Deviatio... HFR98 Annualized Standard De...
Old Mutual European Statist... Insufficient Data For Standard Deviatio... HFR98 Annualized Standard De...

The **Pass\Fail Report** lists all funds in the universe your search was run on. When the report opens you will have two expandable options: **Passed Search** and **Failed Search**. When you expand either of these options, the list of funds that passed or failed will be visible. These too are expandable by fund. Click the plus sign next to a fund to view, in row format, your search criteria.

3. Search Criteria Report:


Search Report - Sample Search - (8/10/2006 8:05:30 AM)
File View Save All Passed Funds to a Universe
Search Summary Report Pass\Fail Report Search Criteria Report
Market Neutral Equity = True (hedgefund.net) (325 passed, 6,256 failed, 4,564 unknown) of 11,145
Passed Condition 325 of 11,145
Failed Condition 6,256 of 11,145
Unknown 4,564 of 11,145
Eq Market Neutral = True (HFR98) (161 passed, 5,596 failed, 5,063 unknown) of 10,820
Passed Condition 161 of 10,820
Failed Condition 5,596 of 10,820
Unknown 5,063 of 10,820
Unchecked 325 unchecked
Compound Annualized Return >= 12.00% (104 passed, 382 failed, 0 unknown) of 486
Annualized Standard Deviation < 10.00% (60 passed, 44 failed, 0 unknown) of 104
Beta < 1.0 (60 passed, 0 failed, 0 unknown) of 60
Search Summary: "Sample Se...
Date: 8/10/2006 8:05:30 AM
Universe: Current Universe (All.unv)
Passed: 60 of 11,145
Failed: 11,085 of
Warnings
Fund
Warning Message
Evaluated Data
Search Criteria
Old Mutual European Statist... Insufficient Data For Standard Deviatio... HFR98 Annualized Standard De...
Old Mutual European Statist... Insufficient Data For Standard Deviatio... HFR98 Annualized Standard De...
Old Mutual European Statist... Insufficient Data For Standard Deviatio... HFR98 Annualized Standard De...

The **Search Criteria Report** provides a detailed breakdown of which funds passed or failed at the criterion level. Each of the search criteria will be listed by row, which can then be expanded to show a summary of the number of funds that passed or failed each individual criterion. You can then expand the passed or failed options to view the list of funds.

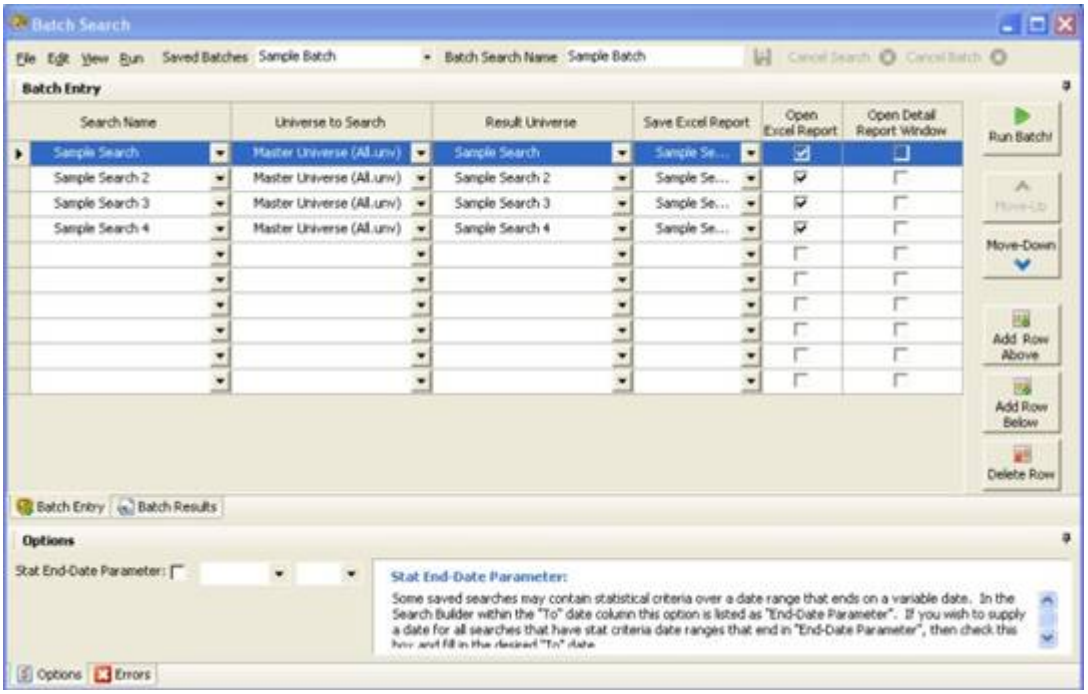
Note: There is a Warnings box located at the bottom of all three reports. This window will list funds with bad or insufficient data. In this example report window above, the funds listed in the Warnings box did not have sufficient (at least two months) data to calculate the standard deviation search criterion.

TIP: To create a universe of just the passed funds click the save option on the menu bar Save All Passed Funds to a universe. This is helpful if you had not saved your passed funds as a universe prior to generating the report. In addition, the funds listed in all three reports will have check boxes in front of the fund name. Use these check boxes to create a universe of just your checked funds. When you have selected the funds to be included in the universe, click **File** on the menu bar and select Create Universe from Checked Funds.

4. Open Search Report in Excel: This option will export the **Search Summary Report** to Excel.

VI. Batch Searches

This feature will allow you to batch run any number of saved search files created with the **Search Builder**. For example, perhaps you create 15 peer universes each month. In the past you would have to possibly run numerous individual searches and then save each resulting universe. With **Search Builder** you can now save each of the 15 peer searches as search files. Using the new **Batch Searches** you can run all 15 saved searches at one time. The **Batch Search** feature can be accessed with the Search button at the top of the PerTrac window or from the **Tools** menu in the menu bar. Once selected the **Batch Search** window will appear.

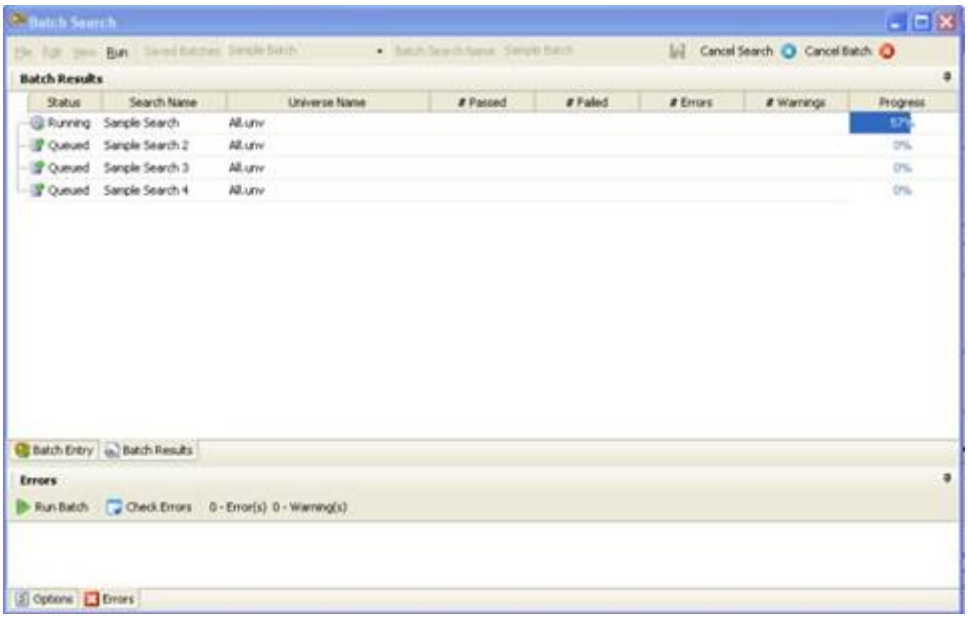

Batch Search
File Edit View Run
Saved Batches Sample Batch
Batch Search Name Sample Batch
Batch Entry
Search Name
Universe to Search
Result Universe
Save Excel Report
Open Excel Report
Open Detail Report Window
Sample Search
Master Universe (All.unv)
Sample Search 2
Sample Search 3
Sample Search 4
Run Batch!
Move-Up
Move-Down
Add Row Above
Add Row Below
Delete Row
Batch Entry
Batch Results
Options
Stat End-Date Parameter:
Stat End-Date Parameter:
Some saved searches may contain statistical criteria over a date range that ends on a variable date. In the Search Builder within the "To" date column this option is listed as "End-Date Parameter". If you wish to supply a date for all searches that have stat criteria date ranges that end in "End-Date Parameter", then check this
Options
Errors

Setting up and running a batch search is simple.

1. **Search Name:** Click the down arrow in the Search Name column to select your saved searches. There is no limit to the number of saved searches that can be included in the batch search.
2. **Universe to Search:** For each of your searches selected in the Search Name column, select the universe you want to search. Click the down arrow to select the universe. If you are searching on your entire database, select Master Universe (All.unv).
3. **Result Universe:** For each saved search the resulting universe will have to be named. You can type a name directly into the field, or click the down arrow to select a universe name from your default universe folder.
4. **Save Excel Report:** When batch running your saved searches you can elect to have the Search Summary Report automatically generated and saved as an Excel file. Enter names for you Excel files in this column, or click the down arrow to select a previously saved .xls file.
5. **Open Excel Report:** Checking this option will open the Search Summary Report in Excel for each of the searches in your batch run.
6. **Open Detail Report Window:** Checking this option will open the Search Report window in PerTrac for each of the searches in your batch run. The Search Report window, as mentioned above contains three reports: Search Summary Report, Pass/Fail Report and Search

Criteria Report. A separate Search Report window will open for each saved search in your batch search.

7. **Batch Search Name:** When all selections have been made, save the batch search as a file. Type a name for your batch search in the Batch Search Name box on the upper menu bar. Click **Save** icon to save your file.
8. **Saved Batches:** When you enter the batch search window click the down arrow on the Saved Batches drop-down menu on the upper menu bar to select your previously saved batch search files.
9. **Run Batch! :** Click **Run Batch!** with the green arrow icon to begin the batch run. When you run the batch search the following Batch Results window will appear.



This window will indicate which search is running, its percent completed progress, and which searches are in the queue.

Note: Located on the lower left side of the **Batch Search** window you will notice an option for Stat End-Date Parameter. Remember this is an option in the **To** field for the end date in the Search Builder window. This option is a shortcut when running searches each month, allowing the statistic to be calculated through the new month end date. It saves you from having to enter the new end date each month. Check the Stat End-Date Parameter box on the Batch Search window if any of your searches contain statistics criteria with End-Date Parameter.

Getting Started

1.1 - PerTrac Installation Requirements and Instructions

System Requirements

PerTrac was designed to take advantage of the latest in hardware and software technology and may therefore not operate efficiently on older and/or slower hardware. The following conditions are the minimum system recommendations:

- 1.6 GHz processor
- 256 MB memory
- 4 GB free space on hard disk
- CD-ROM Drive
- SVGA Graphics (1024 X 768 Resolution, 2 MB RAM)
- 17" Monitor (recommended)
- Windows 2000, Windows ME, Windows NT, Windows 98, Windows XP
- Internet connection with 56 kbps modem (high speed internet connection is strongly recommended)

Checking System Settings

PerTrac requires that the system display be set to at least 1024 by 768 pixels with small fonts. To check your system settings, go to **Start** menu, then select **Control Panel**.

1. Double-click **Display** to open the **Display Properties Window**.
2. Select the **Settings** tab and change the **Desktop Area** settings to **1024 by 768 pixels**.
3. Change the **Font Size** to **Small Fonts**.
4. Set the Color Palette to **High Color**. Click **OK**. It may be necessary to restart your system for the changes to take effect.

IMPORTANT NOTE: Please take a moment to ensure that the system date for your computer is set correctly. The security key reads the date to which your computer is set. If the key reads an incorrect system date, the key may fail to operate or may eventually require reprogramming.

Installing PerTrac – Individual and Network (Non-SQL versions)

The PerTrac installation CD comes with an interactive installation program that includes several possible installation procedures. Please follow these steps to install your PerTrac software:

1. Insert the PerTrac Installation CD-ROM.

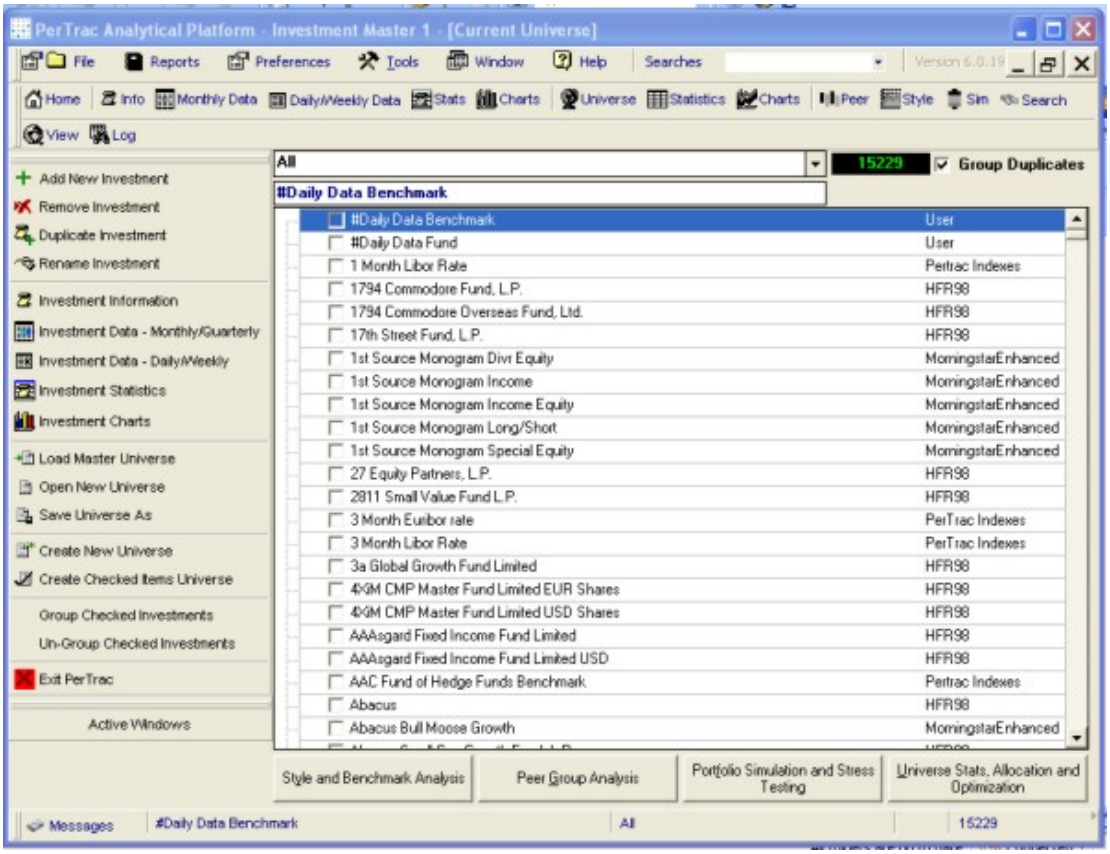
2. If your computer runs the CD-ROM automatically (usually within 15 or 20 seconds), the setup program will begin and you need only to follow the instructions on the screen.
3. If your computer does not automatically run the CD-Rom, click on the **Start** menu, then click **Run.** When the Run box appears, click on **Browse**, then select the disk drive containing the CD-ROM. There will be a file named **Autorun.exe,** on the CD-ROM. Click on this file to open the installation process.

4. Follow the installation instructions required for either your Single User or Network PerTrac license. The installation instructions cover both the parallel and USB port key options. A network install requires the installation of a license server setup on the machine acting as the server. Each user must install PerTrac on their local machine and point to the network server for PerTrac to operate properly.

NOTE: if you did not receive, the installallation CD and require installation procedures, please visit the following website:
http://PerTrac.PerTracnet.com/per0020/web/me.get?WEB.websections.show&PER0020_992
This site contains thorough installation instructions and PerTrac tutorials. Call technical support 800-851-5880 x5 for help regarding installation.

1.2 - Starting PerTrac

Click **Start** at the lower left hand corner on your menu bar, select **Programs**, then select **PerTrac**, then (i.e. **PerTrac, PerTrac Network or PerTrac SQL**). The file will have the yellow PerTrac logo icon to the left of the file name. PerTrac will open to the **Home** or **Current Universe Window** as seen here.



NOTE: If you are a new PerTrac user, you will be prompted to **Open an Active Database** when the **Home** widow appears. PerTrac will look for the databases in the PerTrac/Database folder on your C:\ drive and open a dialog box that shows you the contents of the folder. In this **Database** folder you will find a **PerTrac Blank (V5.0)** database and a **PerTrac Index Database**. **Open** the **PerTrac Index Database**. At this point, PerTrac is now open with a list of the benchmarks in the PerTrac Index Database. PerTrac is now open with a list of the benchmarks in the PerTrac Index Database. You have the ability to change or update this database at any time as well.

Soft-key Licensing

PerTrac has started the transition from the physical hard-key (USB/Parallel Port dongle) license to an electronic soft-key license. Users who have a soft-key license no longer need to plug any special hardware into their computers to run PerTrac. (Note: This option is currently only available for the single user license. The network (concurrent) softkey license will be available in the near future. Your current hard-keys (USB/Parallel Port) will continue to work as well.) If you would like to take advantage of soft-key licensing please follow these steps:

1. Contact Amanda Sturgeon in the U.S. at 775-851-5880 ext 23. Once approved you will receive an email with your soft-key license number.

2. When you receive your 16 digit soft-key license number, complete the “License Configuration” form. To do so, click **Preferences** on the PerTrac upper menu bar. About half way down click **License Configuration.** The form shown to the right will open.
3. **Key Type:** Select “Software Activation” from the drop-down menu. Under **Software Activation Settings,** enter the Product Key (your 16 digit number), First Name, Last Name, Phone and Computer Description fields.
4. Click **Save Changes/Exit.**

   Note: To configure specific proxy settings click **Configure Proxy Settings** on the lower left side of the window.

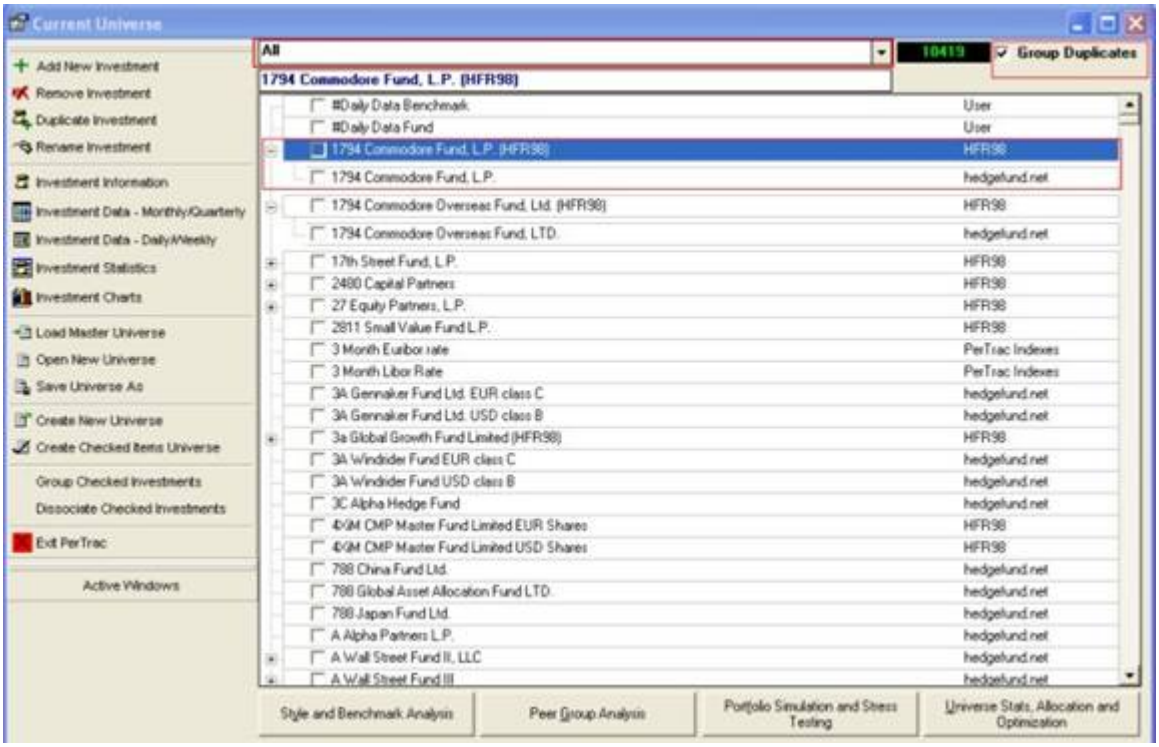
Once the **License Configuration** has been saved, a **Software License** form will be created, which is also located on the **Preferences** tab. This form serves two main purposes.

1. The new soft-key option requires an internet connection. The license will work for two weeks each time you open PerTrac. If you do not connect to the internet within two weeks the license will have to be reactivated. To reactivate your license you will have to phone PerTrac technical support at 775-851-5880 to be issued a 25 digit “Activation Key” number. Enter that number on this form in the “Activation Key” boxes. Once the number has been entered, click **Renew Activation**.

2. This form will also be used to release a license. In the past, if multiple users shared a license, the associated hard-key would have to be physically moved from computer to computer. The new soft-key allows the current user to release the license so that it can be activated by another user. To release your license, click **Release Activation**, at which point you will be logged out of PerTrac. If someone else is using the license, you will not have access to PerTrac until they release it.

PerTrac ID/Investment Grouping: This feature addresses the issue of multiple records for the same investment when multiple databases from different investment data vendors are merged into a single, master database. Through rigorous qualitative and quantitative comparisons of databases from different data vendors, PerTrac can now identify investment records from different data sources that are actually the same investment. The user has the option of grouping duplicate investment records together so that only one record is shown for each unique investment in the Home/Current Universe window. The other duplicate record(s) for an investment are not deleted, but simply hidden in a tree format. The user can prioritize the various data sources used to create the merged database in order to determine which investment record will be the one displayed.

The PerTrac Home/Current Universe window also has a new look.

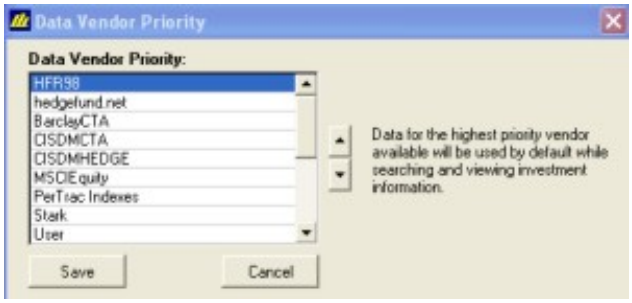


1. **Group Duplicates:** This is a new check box located on the upper right-hand side of the Home window. When **Group Duplicates** is checked, all investment records for the same fund will be grouped by way of a new tree format, located just to the left of the investment master names. Plus and minus signs will show or hide the duplicate records. When the **Group Duplicates** box is unchecked, all investment records will be listed in the Home window without the new tree structure. The black box containing the number of records in the Home window will change when the **Group Duplicates** box is checked. When unchecked, the total number of

investment records, including all duplicates, will be shown. When checked, the black box will show the number of unique investments (excluding duplicates).

TIP: If your investment records are grouped, we have added a new drop-down box to the lower left corner of the Investment Information, Investment Statistics and Investment Data – Monthly/Quarterly windows. The drop-down box will allow you to easily toggle between the duplicate records from different data sources for the currently displayed investment if your data is grouped.

2. **Configure Data Vendor Priority**: If you have multiple databases from different data vendors, and you wish to merge these databases and group duplicate investment records together, you will have to set a priority on which data vendor's record will display for a duplicated investment. To set your data vendor priority, click **Preferences** on the upper menu bar. The first option is **Configure Data Vendor Priority**. Place the data source you wish to give highest priority at the top of the list, and on down so that the lowest priority source is at the bottom of the list. (Based on the example screen above, if PerTrac identified duplicate records for the same investment from Hedgefund.net and Stark, the record from Hedgefund.net would be displayed in the Home/Current Universe window if the Group Duplicates checkbox was checked. The record from Stark would be hidden by default.) This priority will also be used when creating universes with PerTrac's new Search Builder search engine, which can automatically remove duplicate records from your results.



3. **Data Source Name:** In previous versions of PerTrac the data source name was shown in a box at the top of the Home window. Now the data source name is located to the right of the fund name.
4. **New universe selection drop-down menu:** Located at the top of the Home window is a new drop-down menu containing the various universes saved in your default universe folder. You can quickly switch the universe that is currently open with this menu.

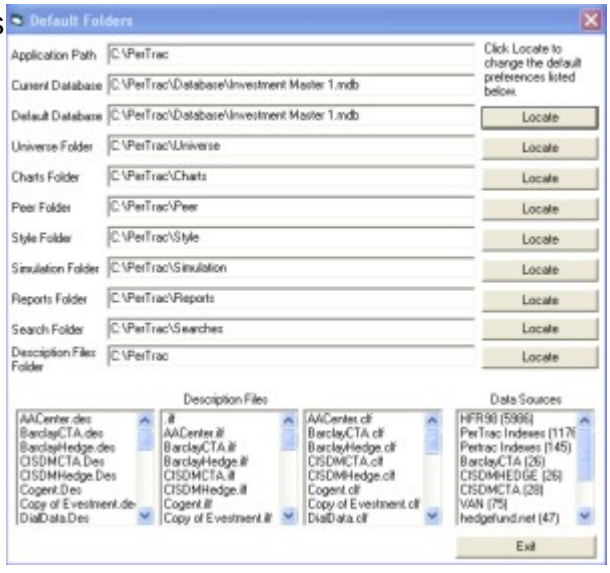
New splash screen for PerTrac announcements

Welcome
Welcome!
PERTRAC Suite
Welcome to PerTrac Messages!
From here you will find helpful messages about new features, upgrades or future releases. From time to time this window will be displayed automatically to inform you of new messages. You can minimize PerTrac messages at any time, or you can browse through previous messages by selecting them in the drop down tool.
PerTrac Messages
Messages
#Daily Data Benchmark
All
10419
Aug-02-06 10:39 AM

There is a new **Messages** button located on the lower left side of the Home window. Clicking this button will launch the new splash screen. Here you will find messages about PerTrac releases, updates and other product news. To hide the splash screen, click **Messages** again.

2.00 - View Default Folders

When PerTrac was installed on your computer, a number of sub-folders were installed as well. These folders are the default folders where you will save and open files created in the PerTrac modules. To view the default folders, or to change paths to your folders, click **Help** on the PerTrac upper menu bar and select **View Default Folders**.



1. **Application Path:** This folder is typically located on you root directory and contains all of the PerTrac program files.
2. **Current Database:** This will show the database currently open in PerTrac.
3. **Default Database:** This will show the path to your default database, which opens each time you launch PerTrac.
4. **Universe Folder:** Default universe folder where your (.unv) universe files will be saved.
5. **Charts Folder:** When creating and saving charts in PerTrac, the files will be saved to this folder.

6. **Peer Folder:** When creating peer databases for analysis in the peer module, all files will be saved to this folder.
7. **Style Folder:** When creating style databases for analysis in the style module, all files will be saved to this folder.
8. **Simulation Folder:** When creating and saving simulation table and chart files all files will be saved to this folder.
9. **Reports Folder:** All PerTrac Reports .tpl files will be saved to this folder.
10. **Search Folder:** All saved search files created in the Search Builder will be saved to this folder.
11. **Description Files Folder:** By default all data vendor description files will be located in this folder, typically the same as the application folder.

Description Files

A database may contain items from several different sources (data vendor or user entered data). Each data source has its own collection of field labels to accompany records. In the example above, for instance, the Data Source is "User", as indicated in the **Source** field just above the second column of check boxes.By the time the **Investment Information** window opens, PerTrac has identified the data source for the current investment and supplies the appropriate labels for each text box and check box.

These labels are initially stored and accessed from your "C:\PerTrac" folder (or another directory where you've installed program). The example above shows the **"General"** page of the Investment Information window (which is just 1 of the 25 pages that use description files) and displays the labels found in "User.des". The following is a complete list of file extensions associated with pages in the Investment Information window:

Investment Information Page	**Description File**
General	{*DataSource*}.des
Information Windows 1 - 6	{*DataSource*}.ilf
Categories Windows 1 - 6	{*DataSource*}.clf
User Information Windows1 - 6	User.ulf
User Categories Windows 1 - 6	User.ucf

TIP: If you move your default folders, or create default folders, to your shared drive, click the locate button at the end of each path to re-map your default folders.

1.4 - Understanding Databases

PerTrac is an application that queries data within a Microsoft database formatted for PerTrac. Prior to performing any analysis with PerTrac, the **User** must first select a **Database** of investments. When opening PerTrac for the first time, most users open the **PerTrac Index Database (see Section 1.2).** However, the **PerTrac Index Database** that comes pre-loaded on the CD-ROM should be updated as soon as possible.

There are also numerous data vendor databases that provide investment information that can be analyzed within PerTrac. All of the databases listed below needs to be updated monthly or quarterly to ensure you have access to the most current investment data. Instructions on how to update your data can be found in section 1.6. In addition, each of these data vendor databases can be viewed separately in PerTrac, or can be merged to create a larger, Master Database.

Instructions for merging databases together can be found later in section 1.6. Please NOTE, however, that the **Home/Current Universe** widow can hold a maximum of 32,766 investments.

NOTE: The 32,766 investment limit only applies to the Microsoft Access version of PerTrac. The SQL version of PerTrac has no limit on the amount of investments.

The PerTrac Blank (V5.0) database is a blank Microsoft Access database that can be used to create your own propriety database of investments. You may merge this database with vendor databases as well.

NOTE: Our technical support staff sends email notifications to all of our clients when a database update has been posted to our site. Upon receipt of the email, follow the instructions in section 1.6 to quickly update your data.

Complimentary Databases -
http://pertrac.pertracnet.com/per0020/web/me.get?WEB.websections.show&PER0020_1001

Subscription Based Databases -
http://pertrac.pertracnet.com/per0020/web/localdata/WEB/DATA/WEBSECTIONS]MATTACHMENT/PER0020_872//NewPriceListTriFold-limiteddescriptionsSep04.pdf

1.5 - Understanding Universes

As mentioned above, all analysis within PerTrac starts with a database of investments. However, much of the analysis you will perform with PerTrac will be done at what we call a **Universe** level. A Universe is defined as any subset of investments contained within a database. The file extension for Universe files is **".unv"**. A universe may consist of (1) fund or investment, 10 funds, 100 funds or an entire database. A universe could consist of fund of funds, the managers within a portfolio, benchmarks, convertible arbitrage managers, large cap value managers, etc. Universe creation and analysis will be addressed in Part III – Multiple Investment/Universe Analysis.

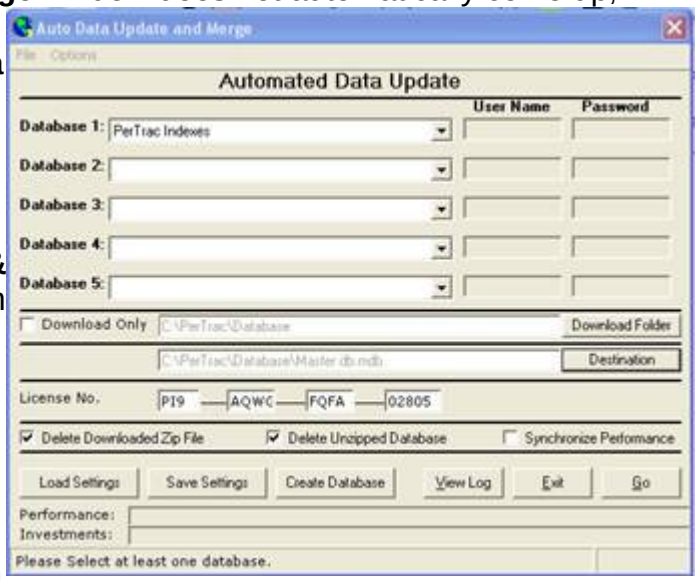
NOTE: As a user of PerTrac you could create hundreds of universes over time. However, there are two system universes you should be aware of that were installed on your computer when you installed PerTrac: the **"All.unv"** and **"Correl.unv"**. These files are located in the PerTrac/Universe sub-folder on your computer, and should not be deleted. The **All.unv** contains all of the investments in the database. The "**All.unv"** file was created for the **Load Master Universe** function. When you click this button, the entire database of investments will be loaded into the universe window for analysis. The **Correl.unv** is a universe created as a comparative benchmark universe. When you perform regression/correlation analysis or create charts where you utilize comparative benchmarks, PerTrac looks for the **Correl.unv** file for benchmark selection. Think of Correl.unv as a list of the common benchmarks you use for most investments.

FAQ: How do I add benchmarks to the Correl.unv universe? At the Home/Current Universe window, click the **Preferences** tab on the menu bar. Then select the first option, **Change Default Correlation Preferences**. This will open a two-box window. The box on the left will list all of the investments in your current database, which will include over 1,000 indices if you download the free PerTrac Index database. (Remember: PerTrac provides more than 1,300 indexes to choose from in the Index Database, or you may enter your own data.) Use the scroll bar in this window to locate the benchmarks you wish to add to the **Correl.unv** file. Highlight the benchmark then click **ADD** on the menu bar. This will add the benchmark to the box on the right. When you have added all the benchmarks you want, click the **Save Correlation Universe** button.

1.6 - Updating Your Databases: Automated Update - View the online tutorial!

Any database to which you subscribe, and PerTrac's free index databases, should be updated monthly. This will insure that you have the most current investment data in the database(s). We have added an **Automated Update** function to the **Tools** tab in PerTrac to facilitate updating database information in PerTrac. The following instructions will explain the process for updating your data with the **Automated Update** feature.

Step 1: From the PerTrac **Home/Current Universe** window, click on the **Tools** tab located next to **Preferences** on your icon bar. Select **Update Database**. If the **Auto Data Update and Merge** window does not automatically come up, select it on the tool bar. An input box will appear: **Auto Data Update and Merge.**



Step 2: Select the appropriate database(s) to download. This window will allow you to **Download Only** or **Download & Merge** up to five databases from our website. Click the arrow at the end of **Database 1** line. This list contains both the complimentary and subscription databases available in PerTrac.

Select a database. Proceed with Database 2, 3, 4 & 5 if applicable. For example, if you subscribe to HFR and would also like to update your index database, select the HFR database for **Database 1** and the PerTrac Indices for **Database 2**. Please NOTE that if you select a subscription database, you must enter your **User Name** and **Password** in the box to the right of the selection.

Step 3: Elect to download the database only, or download the database and merge it with other databases. You must select a download path even if you are merging databases. We recommend that you set the download path to the local drive regardless of your database destination. If you chose a network path, the download may take too long and time out.

Download Database Only

1: If you wish to download the database and not merge it, check the **Download Only box.** You will notice that, when this box is checked, the option to choose a Destination Database for merging disappears.

2: Click the **Download Folder** button at the end of this box. The path you select here will be the location to which the database will be extracted.

3: Enter your license number in the boxes provided if it does not automatically display.

TIP: If you do not have your license number, click on **Help** in PerTrac, and then select **About PerTrac**. Write down the alpha-numeric license number located on the left.

4: Check the box below the license number to delete the compressed WinZip file that has been downloaded (**Delete Downloaded Zip File**). There is generally no reason to keep this file on your computer once the database has been extracted. If you leave it unchecked, the zip file with the database will reside in you specified download directory.

5: Now that you have made your selections, you can save your settings for the next time you update data. Click the **Save Settings** button. When the **Save As** box appears, name your settings file, then click **Save**. The next time you download data, click the **Load Settings** button at the lower left to load your saved selection criteria.

6: Click **Go**. The database will be downloaded to the selected directory.

Download & Merge Your Databases

1: **Do not** check the box **Download Only**. There is now a second box below **Download Folder**, named **Destination.** Click the Destination box to locate the database you want to merge the selected databases.

NOTE: If you do not have a current merged (**Master**) database, follow step 2 below to create one.

2: If you want to create a new merged (Master) database click on the **Create Database** button. A box will appear prompting you to name and save your new Master database. Enter the file name in the **File Name** box then click **Save**. The **Save** box will close and you will be back to the **Automated Update Database** window. You will now receive a confirmation message that your blank Master database has been created. Click OK when this message appears.

3: Enter your license number in the boxes provided if it is not displayed.

TIP: If you do not have your license number, click on **Help** in PerTrac, and then select **About PerTrac**. Write down the alpha-numeric license number located on the left.

4: Check the box below the license number to delete the compressed WinZip file that has been downloaded (**Delete Downloaded Zip File).** There is generally no reason to keep this file on your computer once the database has been extracted. If you leave it unchecked, the zip file with the database will reside in your specified download directory.

5: The second available checkbox allows you to **Delete Unzipped Database(s)** that were selected at the top of the page. If you have merged the databases and don't want to have individual databases as well, check this box to delete the uncompressed database after it has been merged. If you leave it unchecked, you will have one Master Database with all the merged data and individual databases as well.

6. The third checkbox allows you to **Synchronize Performance**. This checkbox should rarely be checked. Once checked, PerTrac will take each item in the source database and make an exact duplicate in your destination. This **will** take considerable time. It is useful, however, if you want to clean up your data to match the vendor download. For example, a manager may have been supplying 20 years of data to the database vendor when he decides he would only like to start displaying 10 years and remove the pro-forma history. PerTrac will not remove the history without the **Synchronize Performance** button checked. PerTrac will only look at the supplied data from the vendor and update your local database with the checkbox off.

7: Now that you have made your selections, you can save your settings for the next time you update data. Click the **Save Settings** button. When the **Save As** box appears, name your settings file, then click **Save**. The next time you download data, click the **Load Settings** button at the lower left to load your saved selection criteria.

8: Click the **Go** button to start the update process. When the update is complete, **"Done"** will appear in the bottom left corner of the window. In addition, an **Error Log** will be generated. If your destination database is open, the log will display a message stating it could not compact the database. This is normal, and you may compact the database at another time. **Clear** the log and **Exit**. Every sixth time you exit PerTrac you will be given the opportunity to compact the database. We recommend that you compact the database often - at least once a week. See **Database Maintenance** for further discussion on this topic.

When the download process is complete, the updated database(s) can be opened in PerTrac. If you selected Download Only, the updated database(s) will be located in the folder that you selected prior to downloading. In PerTrac, click on File\Open New Database and select the database. If you elected to Download & Merge your database(s) with an existing Master Database using the Destination button, and that database was

open in PerTrac, simply click on the Load Master Database button on the left side of the Home window to update/reset the Master Database. If you elected to Download & Merge and the Master Database was not open in PerTrac, click File\Open New Database and select the Master Database.

NOTE: Updating databases may take time. Data Manager backs up your database prior to updating. You can disable the automatic backup by clicking on the Data Manager Options tab and uncheck the option "Always Back-up the Destination Databases". The update may take time. Data Manager by default backs up your database prior to updating.

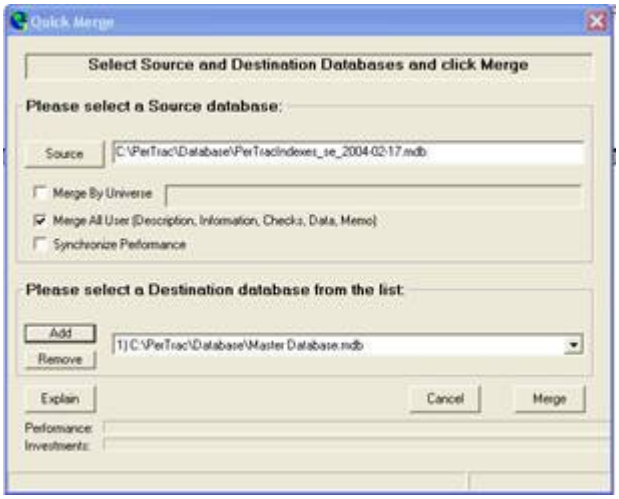
TIP: If at any time in the future you wish to view a tutorial further illustrating the use of the **Automated Update** feature, click on this link.
http://support.PerTrac2000.com/tutorials.asp

1.7 - Merging Databases Manually - View the online tutorial!

The **Automated Update** feature allows you to download and merge any database available on our support site. However, you may subscribe to data vendors that do not provide downloads from our support site (i.e. TASS, Eurekahedge, etc.) that you want to merge with your Master Database. To perform this task we have created a program called **Data Manager.**

To access the **Data Manager** from the **Home** window, click on the **Tools** tab, then select the **Data Manager** option. The following window will appear.

When the **Data Manager** program opens, select **Quick Merge** from the options located on the upper tool bar. The following screen will appear:



To merge databases together only two steps are required. Click on the **Source** Database button. A file window will open allowing you to select the database you want to merge. Select your database and click **Open**. The path will be listed in the box to the right of **Source** button. The next step is to select the database you wish to merge the database into. Click the **Add** button. A window will open for you to select your destination database, usually a **Master Database.** The path to the destination database will be listed to the right of the **Add** button. Once the selections have been made, click the **Merge** button. PerTrac's default settings back up the destination database prior to writing. This will take time. **DO NOT EXIT THE APPLICATION**. Allow it to finish. The word **"Done"** will appear in the bottom left corner of the window when the merge is complete. Close Data Manager. As mentioned above, if the Master Database was open in PerTrac when you merged with the Data Manager, simply click on **Load Master Universe** to update your database to reflect the merged data. If the Master Database was not open, click **File\Open New Database** to select the destination database.

Quick Merge can also blend a small universe of managers and data into a database. The checkbox labeled **Merge by Universe** should be checked if that is the desired action. Once you check the box, you will be prompted to find the **.unv** file that contains the list of mangers to merge. Find it and click **Open**. The button labeled **Merge All User (Description, Information, Checks, Data, Memo)** should be used if you are transferring user entered funds with custom qualitative information. If you do not check that option, any data that you entered in either the **User Information** or **User Categories** Pages will not be transferred. **Synchronize Performance** was explained in the section titled **Download and Merge Database**.

NOTE: The maximum number of investments allowed in the **Home/Current Universe** window is 32,766. This is the PerTrac database limit.

TIP: It is always good to backup your data when prompted. We will examine database maintenance in the following section.

To view additional Data Manager features please refer to Section VIII of this manual.

1.8 - Database Maintenance - View the online tutorial!

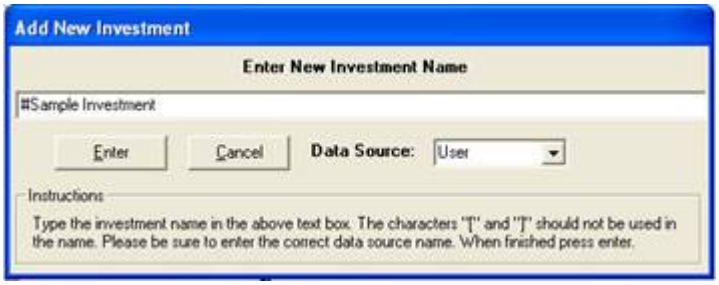
Most of the databases that our clients use contain hundreds or thousands of investments. As the databases grow in size, or as the number of users increases, the potential for corruption increases. Once a database has become corrupt there is a good chance that some or all of your data will be lost. However, there are preventive measures that will reduce the chance of database corruption.

Compacting and Backing up your data: Compacting is a **file** maintenance tool. It is very important that you compact your database at least once a week, if not more often. This is even more important if you are working with other users on a network. The compacting process will keep the file structure from becoming corrupt. PerTrac will prompt you on a regular basis, when you close the program, to compact your database. Please compact. You can also compact your database at anytime from the **Tools/Data Manager** option within PerTrac.

!!! NOTE:Do not use **Ctrl-Alt-Del** while compacting a database. This action will actually corrupt your database to the point that all data will be lost. Let the process finish **even if your task manager says it is not responding.**

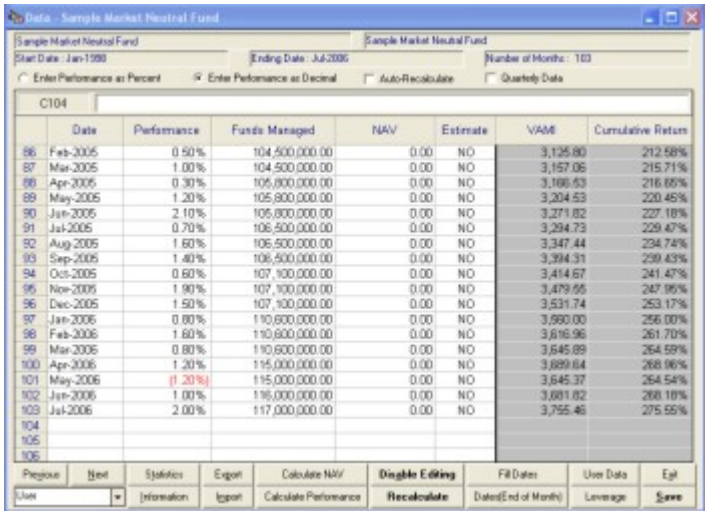
TIP: For more technical preventive and repair measures, have your IT department review this Microsoft Access Database site. http://support.microsoft.com/default.aspx?scid=kb;en-us;Q306204

1.9 - Adding Investments and Performance Data to a Database - View online tutorial!


Add New Investment
Enter New Investment Name
#Sample Investment
Enter
Cancel
Data Source:
User
Instructions
Type the investment name in the above text box. The characters "[" and "]" should not be used in the name. Please be sure to enter the correct data source name. When finished press enter.

PerTrac allows you to enter or import your own investments, returns and data into your database. To add a new investment, use the **Add New Investment** button. This button can be found in the top left corner of the PerTrac **Home** window. This is the easiest way to enter funds into the database. If you need to import a number of funds, please call tech support and we can give you details on using the **Import** function within **Data Manager**. Once you click the **Add New Investment** button, PerTrac will prompt you to **Enter New Investment Name**. The name you enter will be displayed as a record in the database just as any other manager and/or index. Notice that there is a dropdown box for **Data Source**. PerTrac's default Data Source is **User**, which allows the client to enter qualitative and quantitative data that will never be erased or overwritten by a data download. Once you enter a name for a new investment, the window will disappear and put you back at the home window. Find and highlight the investment name that you just entered and click the **Investment Data - Monthly/Quarterly** button (if you are entering monthly or quarterly returns) or the **Investment Data - Daily/Weekly** button (if you are entering daily or weekly data). You can also open the **Investment Data Windows** by clicking the buttons labeled **Monthly Data** or **Daily/Weekly Data** from the **Tool Bar.** Entering monthly, quarterly, daily or weekly data will be explained below.

The Investment Data Window allows you to view and edit the performance data for the current investment.



At the top of the window are fields showing the investment, fund name; start and end dates; and the number of monthly periods in the data table. Below these fields is the standard data table. For data-vendor provided files, the data table is updated each time the user downloads an updated database for that vendor. User investments, however, must be updated manually.

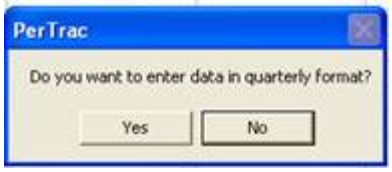
The data table includes columns for **Date, Performance** (percent return), **Funds Managed**, **NAV** (Net Asset Value), **VAMI** (Value Added Monthly Index), and **Cumulative Return**. The data table also contains an Estimate column, which allows you to flag the rows of data that contain estimated performance values. Only the first five columns require data entry, while the **VAMI** and **Cumulative Return** columns contain locked cells that PerTrac calculates automatically.

The **Previous** and **Next** buttons at the bottom of the screen allow you to view data from other investments within your universe. Finally, the **Statistics** and **Information** buttons allow you to move directly to those windows.

When you enter a new investment in PerTrac and click **Investment Data,** a window will appear, indicating that the investment does not have performance data. Click **OK**.

PerTrac
There is either no data for '#Sample Investment' or there is a date missing in the historical data stream. In order to insure accurate calculations, please review the data table and correct any errors that exist.
OK

A small window will appear on the blank data sheet giving you the option to enter performance quarterly. If you want to enter monthly performance click No. Click Yes if you will be adding quarterly data.



Adding Monthly Performance Data

All new investments will initially require that a data stream is entered in the **Investment Data Window**. All existing investments (with the exception of those supported by your data vendor, which are updated when you download a new database) also require monthly or quarterly updates as performance data becomes available.

1. Click the **Enable Editing** button at the bottom of the window **Investment Data** window. Notice how the button is renamed as **Disable Editing**. Enabling editing allows additional functionality to become active. Some of the buttons at the bottom of the window will change from grayed out text (inactive) to black text (active). Also, you will notice a formula bar appears just above the data table, which displays the contents of the current cell.
2. If you are adding a new row to an existing data record, PerTrac will automatically fill in the next date. Otherwise, you can enter the date by typing it in month/year format (For example January 1990 can be entered as either "1/90" or "1-90"). If you would like to enter dates for several rows at a time, enter a date in one cell, then use your mouse to drag and highlight from the dated row to the end of the cells you wish to date, then click **Fill Dates**. Also, the month/year date format assumes that the date is the first of the month. If you want all the data to reflect the last day of the month highlight all the dates that you would like to alter, then click **Dates (End of Month)**. While the day of the month will not be displayed in the cell itself, the change can be viewed in the Cell Contents Field, just above the data table.
3. Move to the Percent Return column either by hitting the Tab key or by clicking on the appropriate cell. Enter the percent return in percent format (For example 2.54% could be entered as ".0254" or as "2.54%)."
4. Alternatively, you can copy an entire series of data from a spreadsheet and paste it into the date and performance columns.
5. If you are tracking the dollars under management for the investment or a fund NAV you can enter the Dollars Managed and NAV in their respective columns. If you do not know, or do not care to track, the Dollars Managed or the NAV, you may leave those fields blank and PerTrac will fill in zeros when the data record is calculated. Similarly, PerTrac will automatically enter "NO" in any blank cells in the **Estimate** column.
6. Continue to fill in the appropriate cells for each row that contains a date.

7. Once you have entered all the data, click the **Recalculate** button at the bottom of the window to update the **VAMI** and **Cumulative Return** columns. Since PerTrac recalculates the figures automatically when you use the **Save** option, it is not mandatory that you click the **Recalculate** button. However, you may find it useful to use the **Recalculate** button to view the recalculations before saving.
8. When you are finished, click the **Save** button, then the **Disable Editing** button. If you click the **Disable Editing** button without having clicked the **Save** button, PerTrac will ask if you want to save your data. If you do not save your data before you exit the **Investment Data** window, any changes you have made since your last save will be lost.

Adding Quarterly Performance Data

To add quarterly investment data, follow the instructions listed above but click YES when asked if you would like to enter quarterly data.

Editing Performance Data

To edit data, highlight the appropriate cell, then click **Enable Editing** . After entering data in a cell, you can move to the next cell by hitting the **Tab** key or by clicking on the desired cell. You can clear the contents of any cell by right clicking and selecting **Clear**. The right-click menu can also be used for **Cut**, **Copy,** or **Paste** functions or for **Inserting** or **Deleting Rows** in the data table.

If you have entered a value in the **Performance** column and wish to calculate the NAV, highlight at least two cells to be calculated in the **NAV** column and click the **Calculate NAV** button. Conversely, if you have entered a new NAV and wish to calculate the **Performance**, highlight at least two cells to be calculated in the **Performance** column and click the **Calculate Performance** button.

When all the data has been edited as desired, click the **Save** button, then the **Disable Editing** button, as before.

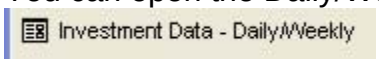
Updating User Entered Investment Returns

Although the **Investment Data Window** allows you to edit all the data for a single investment, you may wish to enter data for several investments at once, such as when new monthly performance data becomes available. This can be accomplished by using the monthly data entry form.

1. From the **Tools** menu, select **Monthly Data Entry Form**.
2. In the **Date** box, (bottom left corner) enter the month and year for which you would like to enter data.
3. Click the **Load** button. PerTrac displays all the data for each investment in the current universe for 3 consecutive months, ending with the month you selected.
4. Enter and edit the data as needed.
5. Click the **Save** button. If you do not save your data before you exit the **Monthly Data Entry Form** window, any changes you have made since your last save will be lost.
6. Exit the **Monthly Data Entry Form**.

TIP: Be sure to open just the universe of investments you wish to update at the Home/Current Universe window. When you click the **Load** button on the form shown above, PerTrac will load the universe listed in the Home/Current Universe window. If you have the entire database open, which could consist of thousands of funds, when you click the **Load** button your system may freeze.

Adding Daily/Weekly Data

You can open the Daily/Weekly **Investment Data Window** by clicking the 

command button from the left-hand side of the **Current Universe Window** or by clicking the button labeled

from the **Tool Bar**. The Daily/Weekly data sheet is similar to the traditional Monthly/Quarterly data sheet in that the same data sheet is used for either data series. The following steps will walk you through adding a new investment with daily or weekly data.

Note: If you are adding daily or weekly data to an existing fund, skip step #1 below and start with #2.

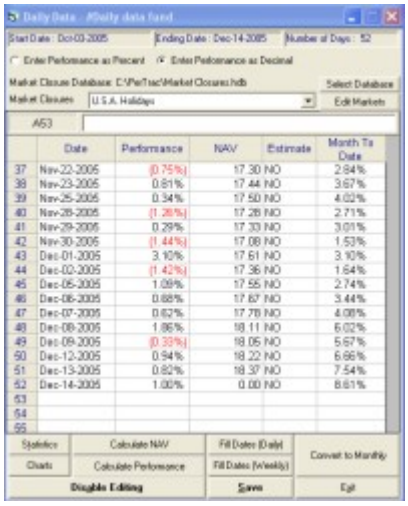
1. Click **Add New investment** , the first button on the left hand side of the Home window. When the **Add New Investment** window opens, enter a name for your fund and click **Enter**.

2. Highlight your fund, then click

on the left-hand side of the Current Universe Window or by clicking the button labeled

from the Tool Bar.

3. The Daily/Weekly data window appears:



Note: This sheet contains five columns of data: Date, Performance, NAV, Estimate and Month To Date.

- **Date:** Contains daily or weekly dates. Weekly dates **must** have a Friday ending date. The Fill Dates (Daily) and Fill Dates (Weekly) options will populate this column for you.
- **Performance:** Contains daily or weekly performance. PerTrac statistics are calculated from this column of data. You can use the performance data to calculate the NAV column. Once the performance has been entered, highlight the NAV column and click **Calculate NAV** from the command bar.
- **NAV:** Contains net asset values. PerTrac statistics are not calculated from this column of data. However, if you receive your daily or weekly data in NAV format, you can enter those values and then use the **Calculate Performance** option to calculate the daily or weekly performance based on the change in NAV. Once the NAV has been entered, highlight the Performance column and click **Calculate Performance** from the command bar.
- **Estimate:** Use this column indicate whether or not you returns are estimates. Enter either Yes or No.
- **Month To Date:** The **Month To Date** column is linked to the **Performance** column. If you enter data directly to the performance column, or calculate the performance from the NAV column, the Month To Date column will update automatically. Conversely, if you enter a month to date value, the performance will column will update based on the change in the month to date column.
- **Note:** If you convert your daily data to monthly with the **Convert To Monthly** option from the command bar, and you don't have a full

month of data, the return in the Month To Date column will be entered on the monthly data sheet.

4. Click **Enable Editing** at the bottom of the **Daily/Weekly Data** window. Enabling editing allows additional functionality to become active. Some of the buttons at the bottom of the window will change from grayed out text (inactive) to black text (active).

5. Click the down arrow on the window next to the heading **"Market Closures"**. Select **U.S.A. Holidays.**

Note: When entering daily data there will be numerous days throughout history when the US markets were closed. (i.e. holidays, weather, world or economic events, etc.) The daily data sheet has to account for these day. You can not skip days when entering data. To account for those market closures, we have included a "Market Closures" schedule that will allow you to skip those dates when entering your data. The "Market Closures" schedule accounts for all US market closures back to January, 1965. **This schedule can be edited if you actually traded on any of these closed days, or if you did not trade on dates not listed. To edit the schedule click the "Edit Markets" to the right of the window, and select "U.S.A. Holidays" from the drop-down menu. You can now insert dates you did not trade, or delete a closed date.**

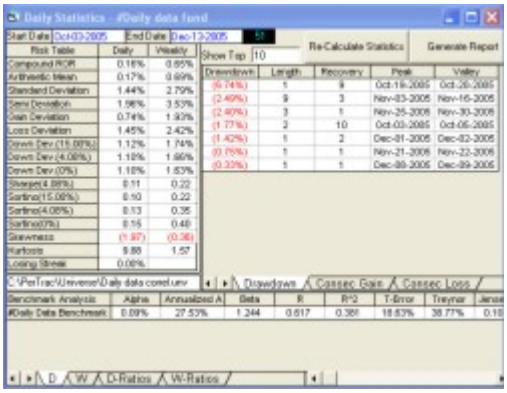
6. Your daily or weekly data can be copied from Excel or entered manually. If your data is copied from Excel the dates have to be formatted with a valid Excel format. If you enter the dates manually, type the date of your first return in cell 1. Highlight any number of rows below row 1 and click **Fill Dates (Daily)** if you are entering daily data. Select **Fill Dates (Weekly)** if you are entering weekly data.

NOTE: Weekly data must have a Friday end date. If you copy weekly data from Excel, or enter your data manually, and enter a date other than a Friday ending date, an error message will appear indicating your date is not a Friday date. The Fill Dates (Weekly) option will automatically enter Friday ending dates.

TIP: If you copy and paste the performance data from Excel, the return format has to be taken into account. If your returns are in percent format in Excel check the option **"Enter Performance as a Decimal"** on the top of the data entry sheet. If your returns are in number format in Excel check the option **"Enter Performance as Percent"**. These options also apply when entering data manually. If **"Enter Performance as a Decimal"** is checked you enter returns in decimal format. (i.e. 2.0% as .02) If the **"Enter Performance as Percent"** is checked enter your returns in number format. (i.e. 2.0% as 2.0)

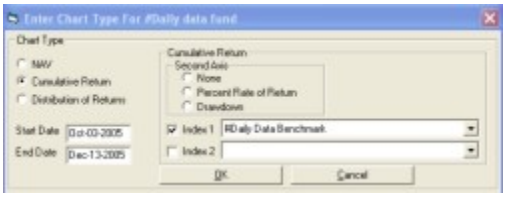
The command buttons:

1. **Enable/Disable Editing:** Enable edit must be selected prior to adding or editing data on this sheet. When data has been entered or edited click Disable Editing to exit and save your data.
2. **Statistics:**



The daily statistics window is similar to the Investment Statistics window for monthly data, which will show the date range of your analysis, number of days, Risk Table, Drawdown, Consecutive Gain, and Consecutive Loss tables, daily and weekly correlation statistics, daily and weekly capture ratios.

3. **Charts:**



The daily and weekly chart window options: NAV, Cumulative Return, Distribution of Returns. A second Y-Axis can also be generated on: Percent Rate of Return and Drawdown. One or Two benchmarks can be included on the NAV and Cumulative Return charts.

4. **Calculate NAV:** If your daily or weekly data was entered in the Performance column, use this option to create a NAV stream based on the performance.

5. Calculate Performance: If your daily or weekly data was entered in the NAV column, use this option to calculate the daily or weekly performance in percent format. **Note:** if you copy or manually enter NAV data, you **must** use the Calculate Performance option. PerTrac calculates all statistics from the performance column.

6. Fill Dates (Daily): This option will fill the Date column with daily dates.

7. Fill Dates (Weekly): This option will fill the Date column with weekly dates. Note: the dates entered will always end on a Friday.

8. Convert to Monthly: This option only applies to daily data. If you would like to use all of PerTrac's functionality to analyze your data, you have the option of converting your daily data streams to monthly data streams. This option will populate the monthly data sheet. If selected, your fund will not have two data sheets, one with daily data the other with monthly. **Note: If your fund has an existing monthly data sheet, and you select this option on the daily data sheet, a message will appear asking you if you want to replace your existing monthly data.**

9. Save: When all data has been entered or edited, click Save.

10. Exit: When your data has been saved, exit the data sheet.

Daily/Weekly Data Reports

The daily/weekly data module contains an export reporting function similar to PerTrac publisher report generation. PerTrac exports the statistics tables and charts to an Excel workbook. You can then create custom reports from scratch or use one of the templates installed on your computer. The following steps will walk you through generating daily/weekly data reports.

1. Open the Daily/Weekly Investment Data Window by clicking the

command button from the left-hand side of the Current Universe Window or by clicking the button labeled

from the Tool Bar.

2. Click **Statistics** on the command bar. This will open the daily/weekly data investment statistics page.

3. The daily/weekly data statistics page contains a **Generate Report** button on the upper right corner. Click **Generate Report** to open the **Daily Report** window.

4. Click **Locate** to open the file selection window. The Custom Reports folder will open by default, which contains the Master template "MasterDailyReport.xls" file for creating your report from scratch, and a pre-built daily data report template "Daily Report.xls".

5. Select "Daily Report 1.xls" and click **Export.** Your report is now open as and Excel workbook.

Note: The "MasterDailyReport" and "DailyReport" files can also be used for weekly data streams.

2.05 - Adding Performance Data - View the online tutorial!

Adding Monthly Performance Data

All new investments will initially require that a data stream is entered in the **Investment Data Window**. All existing investments (with the exception of those supported by your data-vendor, which are updated when you download a new database) also require monthly or quarterly updates as performance data becomes available.

1. From the **Current Universe Window**, highlight an investment and click the **Investment Data** ( ) button.
2. If you are adding data to a newly created investment, you will see a message telling you that there is no data for this investment. Click **OK**.
3. The next window will ask if you want to enter data in quarterly format. If you will be entering monthly data, select **No.**
4. Click the **Enable Editing** button at the bottom of the **Investment Data** window. Notice how the button is renamed as **Disable Editing**. Enabling editing allows additional functionality to become active. Some of the buttons at the bottom of the window will change from grayed out text (inactive) to black text (active). Also, you will notice a formula bar appears just above the data table, which displays the contents of the current cell.
5. If you are adding a new row to an existing data record, PerTrac will automatically fill in the next date. Otherwise, you can enter the date by typing it in month/year format. For example January, 1990 can be entered as either “1/90” or “1-90”. If you would like to enter dates for several rows at a time, drag a selection which encompasses both the most recently entered date and all the cells in which you would like to enter dates, then click **Fill Dates**. Also, since the month/year date format assumes that the date is the first of the month, you may want all the dates to indicate the last day of the month. To do this, highlight all the dates that you would like to alter, then click **Dates (End of Month)**. While the day of the month

will not be displayed in the cell itself, the change can be viewed in the Cell Contents Field, just above the data table.

6. Move to the **Performance** column either by hitting the Tab key or by clicking on the appropriate cell. You may enter percent or decimal format by selecting ether **Enter Performance as Percent** (for example 2.5% entered as 2.5) or **Enter Performance as Decimal** (for example 2.5% as .025) (

) button just above the formula bar.
7. Alternatively, you can copy an entire series of data from a spreadsheet and paste it into the date and performance columns.
8. If you are tracking the dollars under management for the investment or a fund NAV you can enter the **Dollars Managed** and **NAV** in their respective columns. If you do not know, or do not care to track, the Dollars Managed or the NAV, you can leave the fields blank and PerTrac will fill in zeros when the data record is calculated. Similarly, PerTrac will automatically enter "NO" in any blank cells in the **Estimate** column.
9. Continue to fill in the appropriate cells for each row that contains a date.
10. Once you have entered all the data, click the **Recalculate** button at the bottom of the window to update the **VAMI** and **Cumulative Return** columns. Since PerTrac recalculates the figures automatically when you use the **Save** option, it is not mandatory that you click the **Recalculate** button. However, you may find it useful to use the **Recalculate** button to view the recalculations for yourself before saving.
11. When you are finished, click the **Save** button, then the **Disable Editing** button. If you click the **Disable Editing** button without having clicked the **Save** button, PerTrac will ask if you want to save your data. If you do not save your data before you exit the **Investment Data** window, any changes you have made since your last save will be lost.

Adding Quarterly Performance Data

To add quarterly investment data, follow the instructions listed above, but click YES when asked if you would like to enter quarterly data.

Editing Performance Data

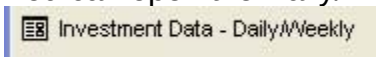
To edit data, highlight the appropriate cell, then click **Enable Editing** button. After entering data in a cell, you can move to the next cell by hitting the **Tab** key or by clicking on the desired cell. You can clear the contents of any cell by right clicking and selecting **Clear**. The right-click menu can also be used

for **Cut**, **Copy,** or **Paste** functions or for **Inserting** or **Deleting Rows** in the data table.

If you have entered a value in the **Performance** column and wish to recalculate the NAV, highlight at least two cells to be recalculated in the **NAV** column and click the **Calculate NAV** button. Conversely, if you have entered a new NAV and wish to recalculate the **Performance**, highlight at least two cells to be recalculated in the **Performance** column and click the **Calculate Performance** button.

When all the data has been edited as desired, click the **Save** button, then the **Disable Editing** button.

2.16 - Adding Daily/Weekly Data

You can open the Daily/Weekly **Investment Data Window** by clicking the 

command button from the left-hand side of the **Current Universe Window** or by clicking the button labeled

from the **Tool Bar**. The Daily/Weekly data sheet is similar to the traditional Monthly/Quarterly data sheet in that the same data sheet is used for either data series. The following steps will walk you through adding a new investment with daily or weekly data.

Note: If you are adding daily or weekly data to an existing fund, skip step #1 below and start with #2.

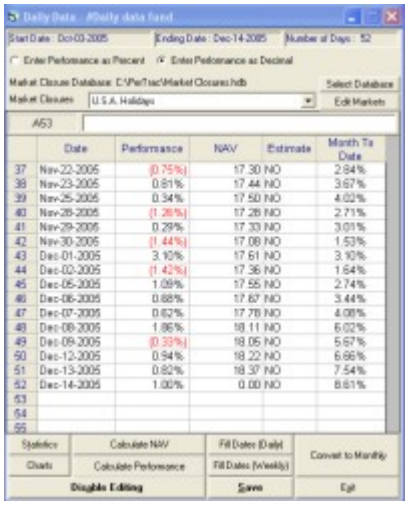
1. Click **Add New investment** , the first button on the left hand side of the Home window. When the **Add New Investment** window opens, enter a name for your fund and click **Enter**.

2. Highlight your fund, then click

on the left-hand side of the Current Universe Window or by clicking the button labeled

from the Tool Bar.

3. The Daily/Weekly data window appears:



Note: This sheet contains five columns of data: Date, Performance, NAV, Estimate and Month To Date.

- **Date:** Contains daily or weekly dates. Weekly dates **must** have a Friday ending date. The Fill Dates (Daily) and Fill Dates (Weekly) options will populate this column for you.
- **Performance:** Contains daily or weekly performance. PerTrac statistics are calculated from this column of data. You can use the performance data to calculate the NAV column. Once the performance has been entered, highlight the NAV column and click **Calculate NAV** from the command bar.
- **NAV:** Contains net asset values. PerTrac statistics are not calculated from this column of data. However, if you receive your daily or weekly data in NAV format, you can enter those values and then use the **Calculate Performance** option to calculate the daily or weekly performance based on the change in NAV. Once the NAV has been entered, highlight the Performance column and click **Calculate Performance** from the command bar.
- **Estimate:** Use this column indicate whether or not you returns are estimates. Enter either Yes or No.
- **Month To Date:** The **Month To Date** column is linked to the **Performance** column. If you enter data directly to the performance column, or calculate the performance from the NAV column, the Month To Date column will update automatically. Conversely, if you enter a month to date value, the performance will column will update based on the change in the month to date column.
- **Note:** If you convert your daily data to monthly with the **Convert To Monthly** option from the command bar, and you don't have a full

month of data, the return in the Month To Date column will be entered on the monthly data sheet.

4. Click **Enable Editing** at the bottom of the **Daily/Weekly Data** window. Enabling editing allows additional functionality to become active. Some of the buttons at the bottom of the window will change from grayed out text (inactive) to black text (active).

5. Click the down arrow on the window next to the heading **"Market Closures"**. Select **U.S.A. Holidays.**

Note: When entering daily data there will be numerous days throughout history when the US markets were closed. (i.e. holidays, weather, world or economic events, etc.) The daily data sheet has to account for these day. You can not skip days when entering data. To account for those market closures, we have included a "Market Closures" schedule that will allow you to skip those dates when entering your data. The "Market Closures" schedule accounts for all US market closures back to January, 1965. **This schedule can be edited if you actually traded on any of these closed days, or if you did not trade on dates not listed. To edit the schedule click the "Edit Markets" to the right of the window, and select "U.S.A. Holidays" from the drop-down menu. You can now insert dates you did not trade, or delete a closed date.**

6. Your daily or weekly data can be copied from Excel or entered manually. If your data is copied from Excel the dates have to be formatted with a valid Excel format. If you enter the dates manually, type the date of your first return in cell 1. Highlight any number of rows below row 1 and click **Fill Dates (Daily)** if you are entering daily data. Select **Fill Dates (Weekly)** if you are entering weekly data.

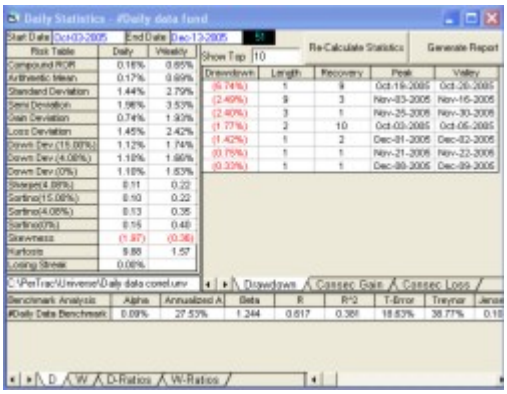
NOTE: Weekly data must have a Friday end date. If you copy weekly data from Excel, or enter your data manually, and enter a date other than a Friday ending date, an error message will appear indicating your date is not a Friday date. The Fill Dates (Weekly) option will automatically enter Friday ending dates.

TIP: If you copy and paste the performance data from Excel, the return format has to be taken into account. If your returns are in percent format in Excel check the option **"Enter Performance as a Decimal"** on the top of the data entry sheet. If your returns are in number format in Excel check the option **"Enter Performance as Percent"**. These options also apply when entering data manually. If **"Enter Performance as a Decimal"** is checked you enter returns in decimal format. (i.e. 2.0% as .02) If the **"Enter Performance as Percent"** is checked enter your returns in number format. (i.e. 2.0% as 2.0)

The command buttons:

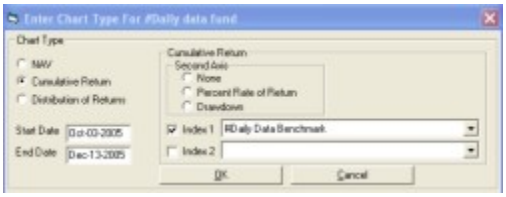
1. Enable/Disable Editing: Enable edit must be selected prior to adding or editing data on this sheet. When data has been entered or edited click Disable Editing to exit and save your data.

2. Statistics:



The daily statistics window is similar to the Investment Statistics window for monthly data, which will show the date range of your analysis, number of days, Risk Table, Drawdown, Consecutive Gain, and Consecutive Loss tables, daily and weekly correlation statistics, daily and weekly capture ratios.

3. Charts:



The daily and weekly chart window options: NAV, Cumulative Return, Distribution of Returns. A second Y-Axis can also be generated on: Percent Rate of Return and Drawdown. One or Two benchmarks can be included on the NAV and Cumulative Return charts.

4. Calculate NAV: If your daily or weekly data was entered in the Performance column, use this option to create a NAV stream based on the performance.

5. Calculate Performance: If your daily or weekly data was entered in the NAV column, use this option to calculate the daily or weekly performance in percent format. **Note:** if you copy or manually enter NAV data, you **must** use

the Calculate Performance option. PerTrac calculates all statistics from the performance column.

6. Fill Dates (Daily): This option will fill the Date column with daily dates.

7. Fill Dates (Weekly): This option will fill the Date column with weekly dates. Note: the dates entered will always end on a Friday.

8. Convert to Monthly: This option only applies to daily data. If you would like to use all of PerTrac's functionality to analyze your data, you have the option of converting your daily data streams to monthly data streams. This option will populate the monthly data sheet. If selected, your fund will not have two data sheets, one with daily data the other with monthly. **Note: If your fund has an existing monthly data sheet, and you select this option on the daily data sheet, a message will appear asking you if you want to replace your existing monthly data.**

9. Save: When all data has been entered or edited, click Save.

10. Exit: When your data has been saved, exit the data sheet.

Daily/Weekly Data Reports

The daily/weekly data module contains an export reporting function similar to PerTrac publisher report generation. PerTrac exports the statistics tables and charts to an Excel workbook. You can then create custom reports from scratch or use one of the templates installed on your computer. The following steps will walk you through generating daily/weekly data reports.

1. Open the Daily/Weekly Investment Data Window by clicking the

command button from the left-hand side of the Current Universe Window or by clicking the button labeled

from the Tool Bar.

2. Click **Statistics** on the command bar. This will open the daily/weekly data investment statistics page.

3. The daily/weekly data statistics page contains a **Generate Report** button on the upper right corner. Click **Generate Report** to open the **Daily Report** window.

4. Click **Locate** to open the file selection window. The Custom Reports folder will open by default, which contains the Master template "MasterDailyReport.xls" file for creating your report from scratch, and a pre-built daily data report template "Daily Report.xls".

5. Select "Daily Report 1.xls" and click **Export.** Your report is now open as and Excel workbook.

Note: The "MasterDailyReport" and "DailyReport" files can also be used for weekly data streams.

Getting Started SQL Version

1.1(a) – SQL Server Requirements

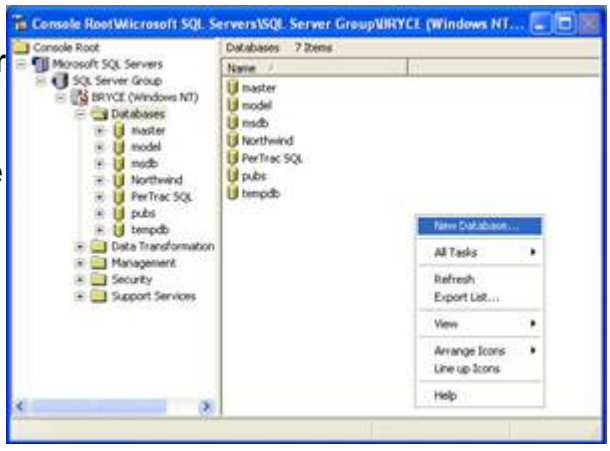
- 10/100 MB Ethernet card
- MS SQL Server 7.0 or higher
- 1 GB RAM
- 1 GB free space for Database
- CD-ROM Drive
- 1 GB or more processor speed

NOTE: Setting up databases and users should be done by qualified IT personnel. SQL Server knowledge is assumed in this documentation.

Run the PerTrac SQL installation program and follow the instructions on the screen. We suggest that you accept all the defaults. Icons will be added to your Start menu and Desktop for **PerTrac SQL**, **Data Manager SQL** and **Reports SQL**. This initial installation can be done on any workstation or server that has Microsoft SQL Server installed with proper permissions to create a database and add users and/or groups. Client workstations should have software installed after the database and all permissions are set up. Setting up workstations will be covered in section 1.3(a).

A SQL script file (PerTrac Blank SQL.sql) is installed to the PerTrac\Database folder. Launch the file and use the following steps to create a new PerTrac formatted SQL Server database on your designated SQL server.

1.2(a) – Creating a New SQL Database



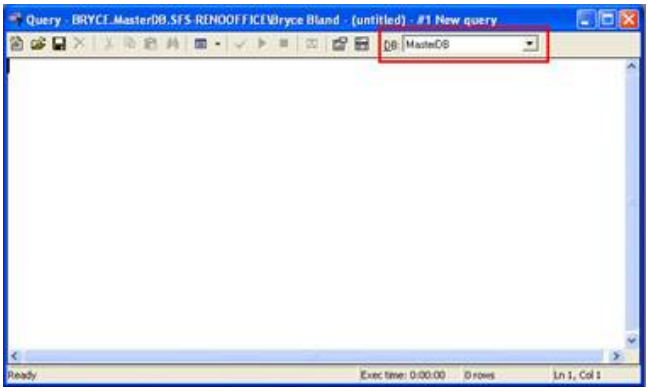
Step 1: You create a new SQL Server Database in SQL **Enterprise Manager** which can be found by going to your **Start** menu, selecting **Microsoft SQL Server** program group and **Enterprise Manager**. This launches a window detailing directories in your **SQL Server Group**. Click on the **Databases** sub-directory. This lists the existing databases. Right click and select **New Database** from the pull down menu. Give your database a name. Double check the file location and then click **OK.**

Step 2: Click the **+** sign to expand the newly created databases in the tree view on the left hand side of the window.

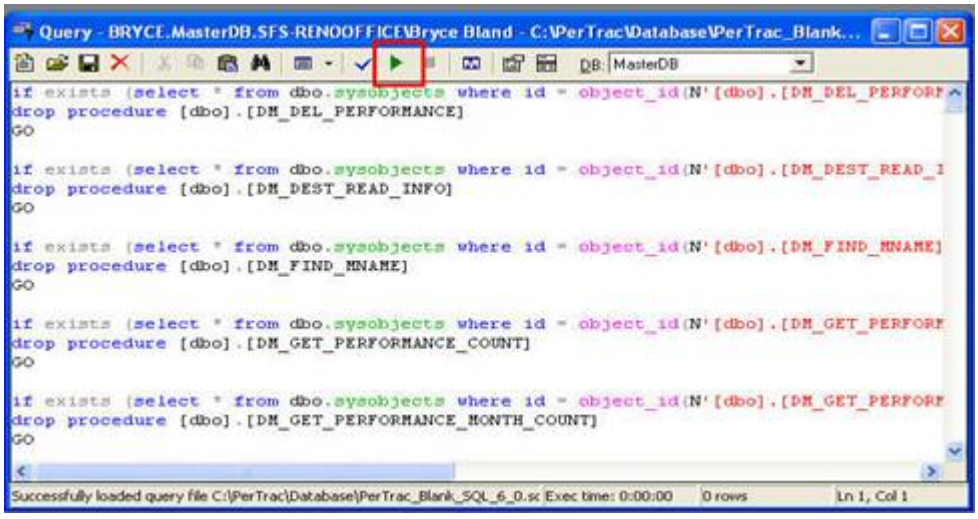
Step 3: Select **Tables** from the list under the **Database** folder.

Step 4: Select **Tools** from the File Menu and select **SQL Server Query Analyzer** from the pull down menu.

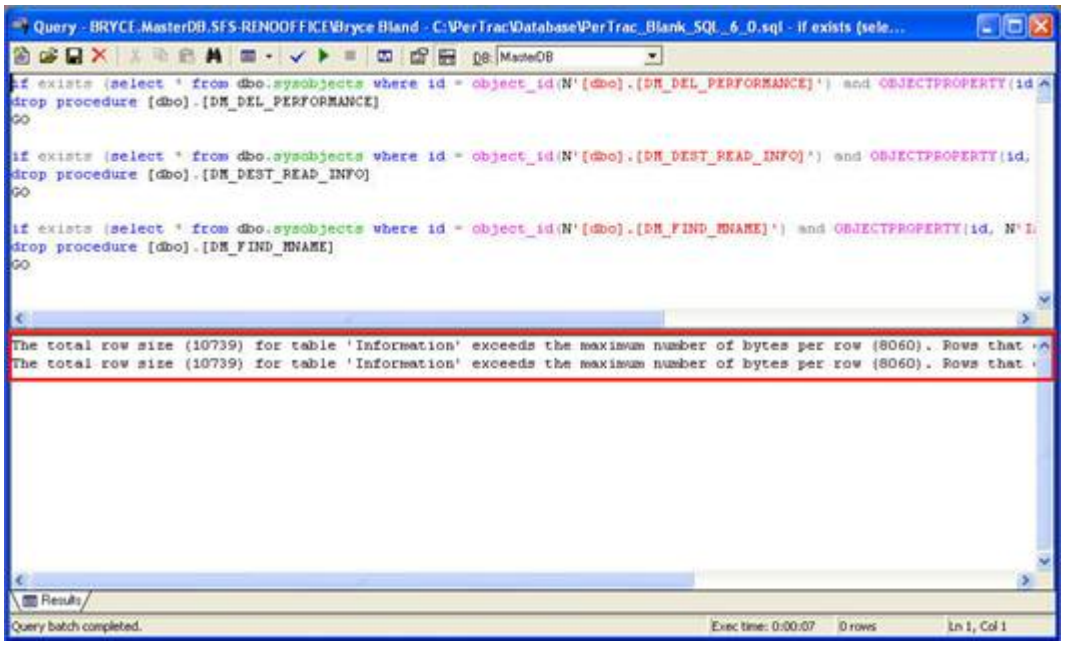
Step 5: A window (like that to the right) will appear. Please ensure that the name of the database that you have just created appears in the pull down box. If it does not, please select it. Your **PerTrac** database will not function correctly unless you select the newly created database. Leave the query window open.



Step 6: Click the **File Open Icon** on the menu bar, select the **PerTrac_Blank_Database_6_0.sql** file located in the PerTrac\Database folder, and click **Open.** Your screen should now look like the following figure.


Query - BRYCE.MasterDB.SFS-RENOOFFICE\Bryce Bland - C:\PerTrac\Database\PerTrac_Blank...
DB: MasterDB
if exists (select * from dbo.sysobjects where id = object_id(N'[dbo].[DM_DEL_PERFORM
drop procedure [dbo].[DM_DEL_PERFORMANCE]
GO
if exists (select * from dbo.sysobjects where id = object_id(N'[dbo].[DM_DEST_READ_I
drop procedure [dbo].[DM_DEST_READ_INFO]
GO
if exists (select * from dbo.sysobjects where id = object_id(N'[dbo].[DM_FIND_MNAME]
drop procedure [dbo].[DM_FIND_MNAME]
GO
if exists (select * from dbo.sysobjects where id = object_id(N'[dbo].[DM_GET_PERFORM
drop procedure [dbo].[DM_GET_PERFORMANCE_COUNT]
GO
if exists (select * from dbo.sysobjects where id = object_id(N'[dbo].[DM_GET_PERFORM
drop procedure [dbo].[DM_GET_PERFORMANCE_MONTH_COUNT]
GO
Successfully loaded query file C:\PerTrac\Database\PerTrac_Blank_SQL_6_0.sc
Exec time: 0:00:00
0 rows
Ln 1, Col 1

Step 7: Click the **PLAY/RUN** Icon (see above) on the tool bar. This will execute the selected script. Warning errors are nomal during this process. Close the query window.


Query - BRYCE.MasterDB.SFS-RENOOFFICE\Bryce Bland - C:\PerTrac\Database\PerTrac_Blank_SQL_6_0.sql - if exists (sele...
DB: MasterDB
if exists (select * from dbo.sysobjects where id = object_id(N'[dbo].[DM_DEL_PERFORMANCE]') and OBJECTPROPERTY(id
drop procedure [dbo].[DM_DEL_PERFORMANCE]
GO
if exists (select * from dbo.sysobjects where id = object_id(N'[dbo].[DM_DEST_READ_INFO]') and OBJECTPROPERTY(id,
drop procedure [dbo].[DM_DEST_READ_INFO]
GO
if exists (select * from dbo.sysobjects where id = object_id(N'[dbo].[DM_FIND_MNAME]') and OBJECTPROPERTY(id, N'I
drop procedure [dbo].[DM_FIND_MNAME]
GO
The total row size (10739) for table 'Information' exceeds the maximum number of bytes per row (8060). Rows that
The total row size (10739) for table 'Information' exceeds the maximum number of bytes per row (8060). Rows that
Results
Query batch completed.
Exec time: 0:00:07
0 rows
Ln 1, Col 1

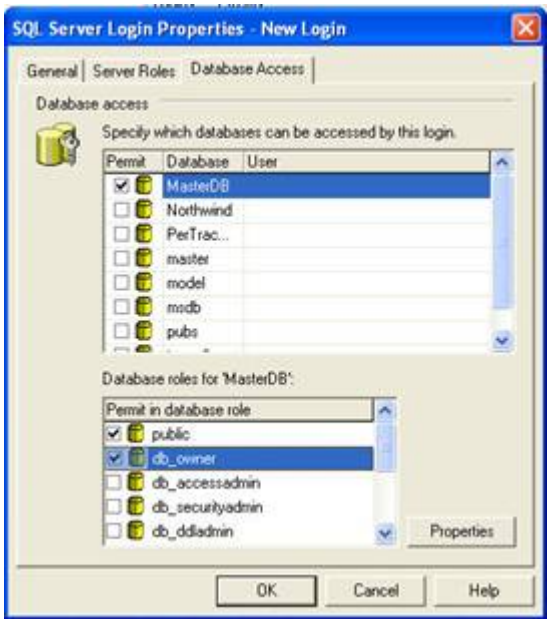
-

1.3(a) – Setting up Users

The User setup process depends on whether you use **Windows NT Authentication** or **SQL Server Authentication**. The most secure method is **Windows NT Authentication** and the process is displayed below. PerTrac SQL supports both.

Giving Users of Existing Groups Access to a Database

We are assuming that the system administrator is familiar with creating windows user groups and assigning permissions to databases. In order for users to have COMPLETE functionality in PerTrac, they must have DB_Owner permissions. If you would like to have separate groups with limited permissions for table access, etc. please call our technical support number at 775-851-5880 x31 for proper settings. An example of the DB_Owner permissions window is displayed below.



Step 1: Open Enterprise Manager. See Step 1 in 1.2(a) – Creating a New Database if you do not know how to navigate to Enterprise Manager. Highlight the Security option and expand the list with the plus sign. Highlight Logins, right click and select New Login.

Step 2: The SQL Server Login Properties window displays with the General tab selected will be dislplayed. If a dropdown menu is displayed in the Name box, select the proper windows group with domain. If the dropdown menu is not displayed, type in the domain with group (domain\user format).

Step 3: Select the dropdown menu below Windows NT authentication and add the domain if it did not appear. Select Grant access or Deny access for the group with the radio button. Select the newly created database with the dropdown menu and keep the language as Default.

Step 4: Click on the Tab labeled Database Access. Select each database and select their permission levels.

NOTE: In order for users to have FULL functionality in PerTrac, they must have DB_Owner permissions. If you would like to have separate groups with limited permissions for table access, etc. please call our technical support number at 775-851-5880 x31 for proper settings.

Step 5: Repeat these steps for each group that will access the database.

1.4(a) – Merging Data into the SQL Database

Data can be merged into **PerTrac** using the **Data Manager SQL** option in the **PerTrac** program group. Make sure you launch **Data Manager** through the **PerTrac** program group and not the **PerTrac** application itself. **Data Manager**

SQL can be found by going to **Start, All Programs, PerTrac 6.0, Data Manager SQL.** The Data Manager will open a window with many available options.

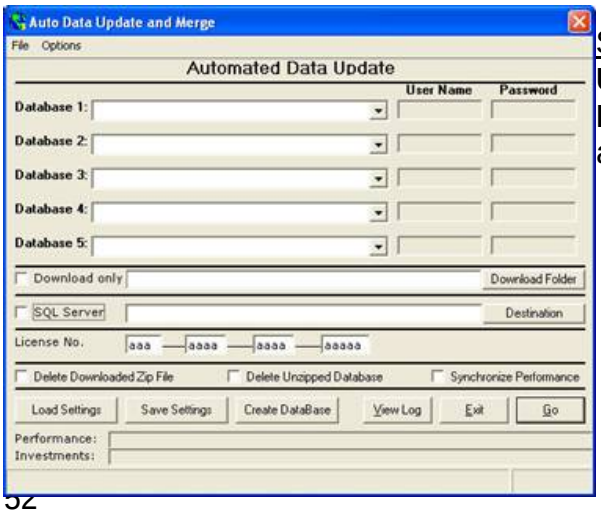
Option 1: This option is for new **PerTrac** users that do not have an existing Microsoft Access Database. Please see the instructions listed under **Updating Your SQL Databases: Automated Update** below.

Option 2: This option is ideal for **PerTrac** Users that are merging a Microsoft Access Database and/or merging data not available through Automated Update. Please see the instructions listed under **Updating Your SQL Databases: Quick Merge** below.

NOTE: Most index and third party databases are available to download using Automated Data Update. See that selection for more details.

1.5(a) – Updating Your SQL Databases: Automated Update

Each of the databases being analyzed within PerTrac should to be updated either monthly or quarterly depending on whether the database is provided on a monthly or quarterly basis. This will insure that you have the most current investment data in the database or databases you are analyzing. Periodically you will receive an email from Strategic Financial Solutions LLC informing you that one or more of the databases available for download with the automated update feature have been updated.



Step 1: Select **Automated Data Update** from the menu and the **Auto Data update and Merge** window appears.

Step 2: Select the appropriate database(s) to be downloaded. This window will allow you to **Download Only** or **Download & Merge** up to five databases from our website. Click the down arrow at the end of **Database 1**. This list contains the complimentary PerTrac databases, as well as the subscription databases. Click on the database you wish to download. If you select a subscription database you must also enter your **User Name** and **Password**, located in the boxes to the right of each database.

NOTE: The three complimentary databases are: **PerTrac Indexes** (which contains approx. 1,300 of the most widely used Traditional and Hedge Fund indices), **MSCI Equity** (which contains approximately 6,000 MSCI indices worldwide), and SSB Indexes (which contains approximately 3,100 **Salomon Smith Barney** indices worldwide)

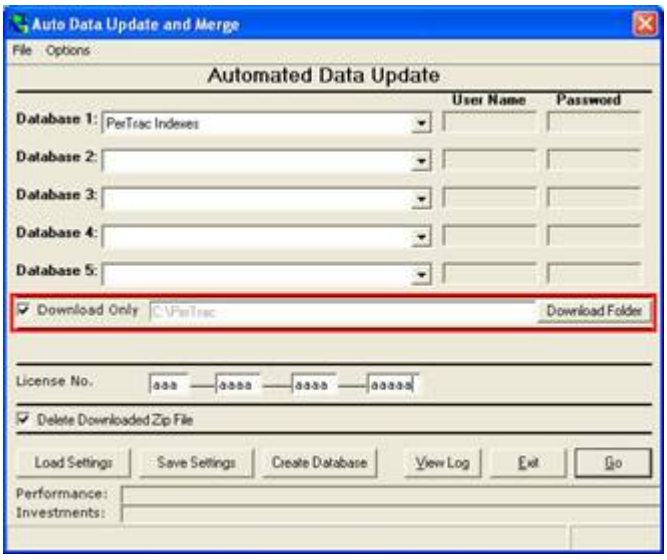
TIP: When you click the down arrow to select a database(s) you will see a long list of database names. However, you may not subscribe to some of them. Rather than sort through the list each time, there is an option in the **Auto Data Update and Merge** window that will allow you to customize the drop down list to show only selected databases. Click the **Options** tab on the **Auto Data Update & Merge** window. The **Proxy/Firewall Settings** window will open. Click the **Automated Data Download** tab. Check each of the databases you want to add to your custom list and then click **OK**.

Proceed with Database 2, 3, 4 & 5 if applicable. Remember: If you select a subscription database(s), you will have to enter your **User Name** and **Password** in the box to the right of each selection.

Step 3: Elect to download the database only, or download the database and merge it with other databases.

Download only

1: If you wish to download the database and not merge it, check the **Download Only box.** You will notice that when this box is checked the option to choose a Destination Database for merging disappears.



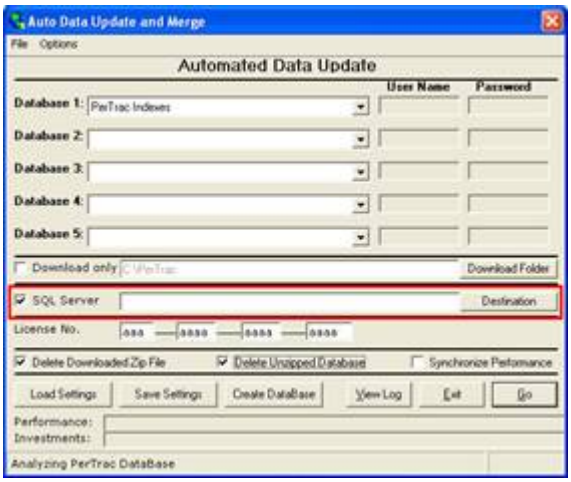
2: Click the **Download Folder** button at the end of this box. The path you select here will be the location the database will be extracted to.

3: Enter your license number in the boxes provided. By default, your license number will be added for you.

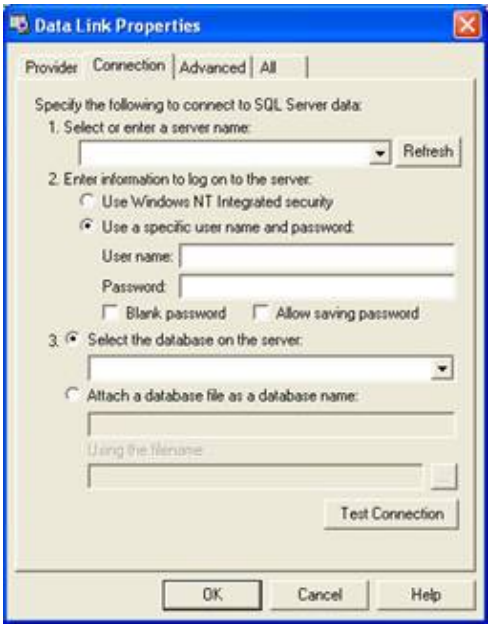
4: Check the box below the license number, **Delete Downloaded Zip File**, to delete the compressed WinZip file that has been downloaded from the web. There is usually no reason to keep this file on your computer.

5: Now that you have made your selections, you can save your settings for use the next time you update data. Click the **Save Settings** button at the bottom of this window. When the **Save As** box appears, Name your settings file, then click **Save**. The next time you download data, click the **Load Settings** button at the lower left to load your saved settings.

Download & Merge Your Databases



1: If you wish to download and merge databases **Do not** check the box **Download Only**. There is now a second box below **Download Folder**, named **Destination.** Click the Destination box to locate the database you want to merge the selected databases with. The SQL version of **Data Manager** allows you to select an Access (mdb) database or a **SQL Server** database, and will have a **SQL Server** check Box. To select a SQL Server database, check the box labeled **SQL Server.** Check this box if you are merging to with a SQL server database.



2: To select the SQL database you wish to merge the new data with, click the **Destination** button. This will open the **Data Link Properties** window. By default the **Connection** tab will open. There are three steps to selecting your database:

1. Select the server name. Click the down arrow to select the SQL Server that contains the database or type in the name of IP address of the server.

2. Enter server log on information. Choose either **"Use Windows NT integrated security"**, or **"Use a specific user name and password"**. If you choose the second

option you must then enter the **User Name** and **Password** in the widows provided. Then check the box **Blank password** if applicable. Always check the **Allow saving password** box.

3. Select the database. Click the down arrow to see a list of SQL server databases. Select the database you want to merge you new data with.

When all information has been entered click the **Test Connection** button on the lower right. When the Test Connection Succeeded message appears, click ok and close this window.

NOTE: The **Data Link Properties** window will require that SQL Server information to be entered. This information should only be entered by your **Database Administrator**.

3: Your license number is automatically entered in the boxes provided.

4: Check the box below the license number, **Delete Downloaded Zip File**, to delete the compressed WinZip file that has been downloaded from the web. There is usually no reason to keep this file on your computer.

5: Choosing the option to download and merge activates a second check-box option just below the license number, **Delete Unzipped Database**. You can elect to delete the individual un-compressed database(s) that were selected at the top of the page. If you have merged the databases and don't want to have individual databases as well, check this box to delete the uncompressed database after it has been merged.

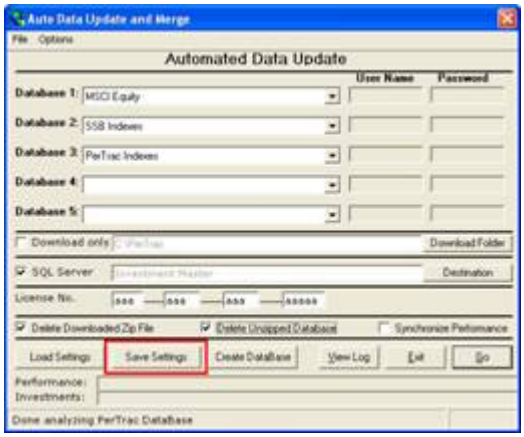
6. **Synchronize performance:** many data vendors make adjustments to their data over time. For example, a data vendor may have included in the historical performance for managers, pro-forma data. Then months or years later delete the pro-forma data, which means it will not show up in the new database available for analysis. The **Synchronize Performance** option will erase the entire history for the funds and replace each performance stream with the data they are currently supplying. If you know the data vendor has made changes since your last database update, you can check this box to completely rewrite the performance data in the destination database.

6: **Save Your Settings:** now that you have made your selections, you can save your settings for use the next time you update data. Click the **Save Settings** button at the bottom of this sheet. When the **Save As** box appears, Name your settings file, then click **Save**. The next time you download data, click the **Load Settings** button at the lower left to bring back your selection criteria.

Step 4: Start the Download: click **Go** to start the update process.

NOTE: When the download process has ended close the **Data Manager** windows. The updated database can now be opened in PerTrac. If you selected **Download Only**, the updated database will be located in the folder that you selected prior to downloading. In PerTrac, click on File\Open New Database and select the database. If you elected to **Download & Merge** your databases with an existing database, and that database was open in PerTrac when you ran the update, click the **Load Master Database** button on the left side of the Home window to update/reset the database. If you elected to **Download & Merge** and the database being merged was not open in PerTrac, click File\Open New Database and select the database.

1.6(a) – Schedule Automatic Database Downloads



The SQL version of PerTrac allows users to schedule automatic database downloads, and then merge the downloaded database with a selected destination database. The following steps will walk you through scheduling your automatic data update.

Step 1: Save your Settings. Prior to scheduling your automatic data update you must save your settings in the SQL Data Manager utility. Click the **Tools** tab on the upper menu bar and select **Update Database**. The Auto Data Update and Merge window will appear. For instructions on setting up your download please see the section on **Updating Your Databases – Automated Update.** To save your download settings click the **Save Settings** button. This will open the **Save As** window to name and save your file. The file will have a ".dmx" extension.

NOTE – Be sure to remember where this file is being saved. In the last step of this process you will have to specify the path of the saved Settings.dmx file.

Scheduled Task Wizard
Enter the name and password of a user. The task will run as if it were started by that user.
Enter the user name:
Enter the password:
Confirm password:
If a password is not entered, scheduled tasks might not run.
< Back
Next >
Cancel

Step 2: Schedule the task. Click the **Start** button on your desktop. Select **Control Panel,** and then double click the **Scheduled Tasks** option. The **Scheduled Task Wizard** window opens. Click the **Next** button to proceed to the program selection window. From this list select **Data Manager SQL.** If **Data Manager SQL** is not listed, click the Browse button to locate the program (located @ C:\PerTrac\DataManagerSQL.exe). Click the Next button.

Step 3: The next window will prompt you to select the period (i.e. weekly, monthly) you want to perform the scheduled task (running the automated database update).

Step 4: The next widow will prompt you to select the day and time for the task.

Step 5: The next window will prompt you to enter a User Name and Password for the computer performing the scheduled task. Enter the data then click the **Next**.

Scheduled Task Wizard
You have successfully scheduled the following task:
Data Manager Enterprise
Windows will perform this task:
At 8:24 AM on day 1 of every month, starting 10/1/2004
Open advanced properties for this task when I click Finish.
Click Finish to add this task to your Windows schedule.
< Back
Finish
Cancel

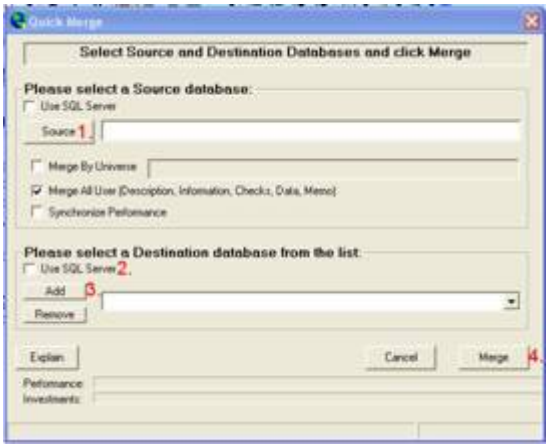
Final Step: The last window will appear stating that you have successfully scheduled the task and will also show the timing of your new task. Now that the task has been scheduled you must specify the path of the Settings.dmx file you saved in Step 1. Check the box **Open advanced properties for this task when I click Finish,** then click the **Finish**.

The **Data Manager SQL** window will open. Now that the task has been scheduled you must specify the path of the Settings.dmx file you saved in Step 1. Enter the path to the saved .dmx file in the window labeled **Run**. For example, if you had saved the Settings.dmx file in your universe folder the path would be entered as: **C:\PerTrac\Data Manager Enterprise.exe –a:C\Universe\Setting.dmx.**

NOTE – this is a sample path to the Data Manager Enterprise.exe file. You would enter your path, or click the **Browse** button to locate this file. However, when the .exe file has been entered, the command **-a:(path to your .dmx file)** must be used to specify the saved settings file for the automated database update.

1.7(a) – Updating Your SQL Databases: Quick Merge

Step 1: Select **Quick Merge** from the menu and the Quick Merge window appears.



Step 2: Select the **Source** database by clicking the **Source** button. **Quick Merge** allows you to merge only one database at a time. Notice the **Use SQL Sever** checkbox option above the Source tab. Only check this if you are merging an existing SQL database.

Step 3: Three checkboxes appear underneath the Source button: **Merge by Universe, Merge all User, (Description, Information, Checks, Data, Memo)** and **Synchronize Performance.** Check the box **Merge all User, (Description, Information, Checks, Data, Memo)** if it is not already checked.

Step 4: Check the **Use SQL Server** checkbox listed below the text **Please select a Destination database from the list** (see above figure number 2).

Step 5: Click the **Add** button and select your destination database. This is the SQL database you created (see above figure number 3). Once you click **Add**, a window like the screen capture to the right will appear. The procedures to properly fill out this window are displayed in the section **Download & Merge your Databases.**

Step 6: Click the **Merge** button and wait for the merge to complete. The merge will be finished when **Done** is displayed in the left corner of the **Quick Merge** window. If you have to merge another database into the destination, repeat **Step 2** and click **Merge**. Close the window when you are finished.

1.8(a) – Installing License Service for Network Users

For network installations of PerTrac, install the license server by following the links on the setup CD-ROM for your key type. Remove any USB or parallel Sentinel SuperPro keys before continuing the installation. We have had reports of problems installing the Sentinel key driver while the key is attached. Once the installation is complete, verify that the SuperProServer service has been installed and started automatically.

1. On the installation CD-ROM select **New Client Installation** as this will ensure you are properly set up. The installation instructions cover both the parallel and USB key options. If you do not know which key option to select, the sheet included with your installation CD-ROM has a section which gives both **License Numbers** and which type of key you have purchased. The most common selection is **SuperPro Net Parallel Port**. After selecting appropriate key type you are given two options for installation; **Install PerTrac License Server** or **Install PerTrac**. Click **Install PerTrac License Server.** Follow the installation instructions after selecting appropriate key type.

2. When the installation is complete, plug in your USB or Parallel key.
   - Make sure that the SuperPro Server Service is **started** in **Services**
   - To Find **Services**, go to **Control Panel/ Administrative Tools/ Services**, here you will find the SuperPro Server Service and again make sure it is **Started**
   - If you do not see a SuperPro Server Service, it did not get installed properly, you will have to manually install by going to your **Start Menu/Programs Files/PerTrac Network Server/Install SuperPro Service**.
   - A window will appear called, “Super Pro Service Loader”, select **install service**.
   - If you get the following error: “Could not start the SuperProServer service on the Local Computer. Error 1067: The process terminated unexpectedly”. You will also need to install the sentinel drivers. To do this go to the following folder: **PerTrac/Drivers/** and run **setupdr.exe**. You will want to make sure the USB key is not plugged in when installing the drivers.
   - Then go back and make sure it says **started** under the **Services**, if it does not, then manually start it

- Now that you have successfully installed the **License Server Setup**, you will need to install the client side on each individual workstation(s).

NOTE: If you did not receive the PerTrac installallation CD and require installation procedures, please visit the following website: http://PerTrac.PerTracnet.com/per0020/web/me.get?WEB.websections.show&PER0020_992
This site contains thorough installation instructions and PerTrac tutorials. Call technical support 800-851-5880 x 5 for any additional help regarding installation.

1.9(a) – Installing PerTrac on the Individual Workstations

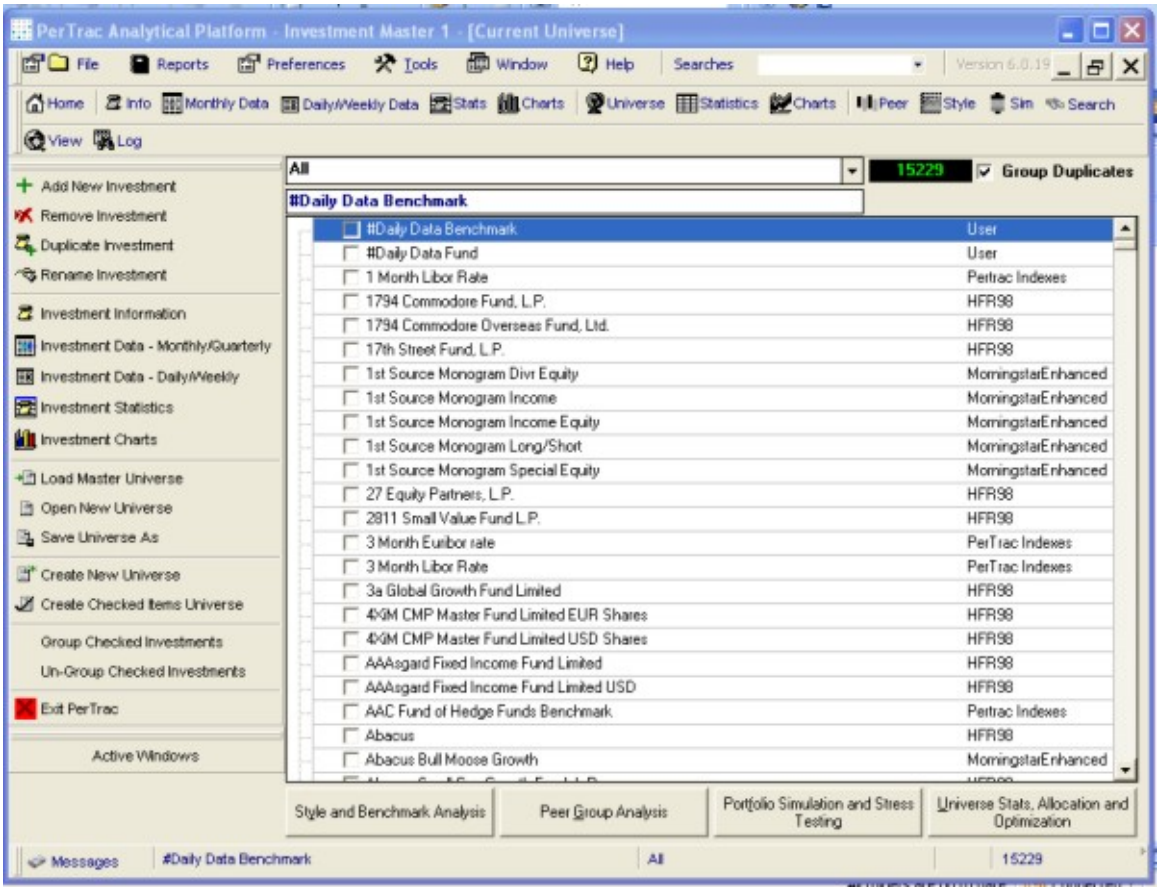
The individual station setup uses the same PerTrac installation CD-ROM. The only difference in the workstation installation will be selecting **Install PerTrac** vs. **Install PerTrac License Server.** You can follow the **Single User Instructions** from here.

Once PerTrac is successfully installed and launched, a network configuration window will appear. In **Key Type** select **SuperPro Net key** and type the **IP Address** of the machine hosting the key in the **Contact Server Box** and leave key timeout alone. This will launch the PerTrac application.

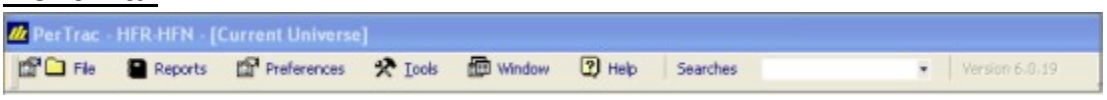
Single Investment Analysis

2.01 - The Master/Home Window

The **Master/Home Window** is the primary window in PerTrac and remains open at all times. It contains the Tool and Menu bars at the top of the screen and the Status Bar at the bottom. The large middle section contains a list of the investments in the database currently open.



Menu Bar

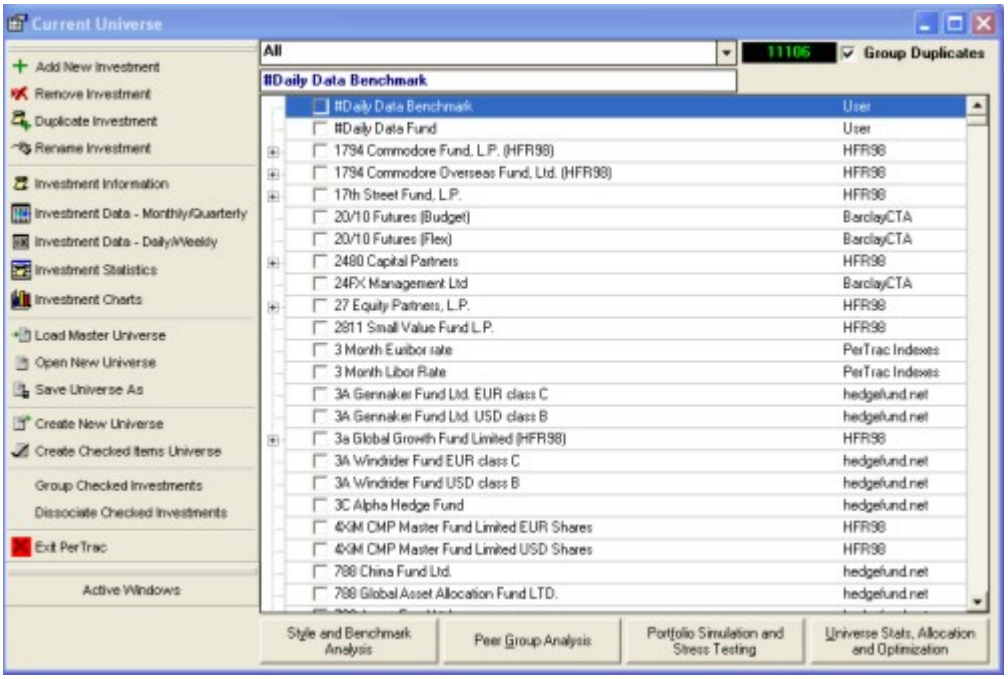


The **Menu Bar** is located at the top of the **Master Window** and offers pull-down menus that are similar to those of a typical Windows program. The PerTrac Menu Bar provides the following menu options:

- **File** - Contains options for opening, creating, and saving Universes. Also allows you to load charts, and exit the program. Contains a quick-launch list of recently used databases. Databases can also be opened or compacted using this menu.
- **Reports** - Investment Summary Reports, Multiple Investment Reports, Investment Statistical Tables, PerTrac Reports, and PerTrac Publisher.
- **Preferences** - Allows you to customize the default settings and control the overall functionality and layout of PerTrac.
- **Tools** - Options for opening the Monthly Data Entry Form, Portfolio Builder, Workbook Designer, Assign Benchmark Universe setup, Assign Peer Universe setup, Currency Conversion, Fee Simulator, Excess Return Conversion, Rename Investments in Universe Files setup, and Data Manager.
- **Window** - Provides options for manipulating the arrangement of active windows.
- **Help** - PerTrac Interactive Manual, PerTrac Online Help, Technical Support, Statistics Definitions, Default Folders and Frequently Asked Questions.

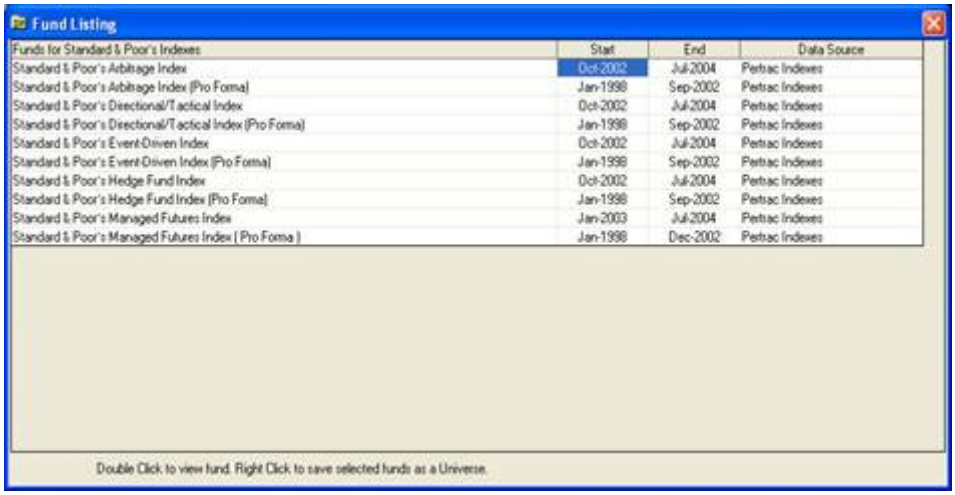
Current Universe Window

The current universe window is the large square area containing the names of the investments. Clicking over your Current Universe with the right mouse button will provide access to some of PerTrac's primary functions. See the box outlined in red below.



Right Click Shortcuts

- **Information** - Displays the **Investment Information Window** for the current investment.
- **Statistics** - Displays the **Investment Statistics Window** for the current investment.
- **Charts** (Investment) - Loads the Single Investment Charting Module for the current investment.
- **Data** - Displays the **Investment Data Window** for the current investment.
- **Open New Universe** – Opens a dialogue box, allowing you to select a new universe.
- **Load Master Universe** – Scans the entire database and builds and displays the Master Universe file "All.unv". The All.unv universe is synonymous with the entire database.
- **Create New Universe** – Opens the **Create New Universe Window**, where you can define a custom universe.
- **Create Checked Items Universe** – Opens the **Create New Universe Window** and places the investments you have checked in the new universe column.
- **List Related Funds** – The **Related Funds** feature will find all funds that have the identical first-field (the first upper left field) values on the general investment information page. Depending on the data vendor, that field could be manager name, company name etc.



Tool Bar

The **Tool Bar** is located immediately below the Menu Bar and contains buttons that allow quick access to PerTrac's primary windows. These buttons launch

functions related to single investment analysis, universe (multi-fund) analysis and PerTrac's Advanced features.

Single Investment Functions

- **Home** - Displays the **Current Universe Window**.
- **Info** - Displays the qualitative information on the **Investment Information Windows** for the selected investment.
- **Monthly Data** - Displays the Monthly/Quarterly historical performance in the **Investment Data Window** for the selected investment.
- **Daily/Weekly Data** - Displays the Daily/Weekly historical performance in the **Investment Data Window** for the selected investment.
- **Stats** - Displays the **Investment Statistics Window** for the selected investment.
- **Charts** (Investment) - Loads the Single Investment Charting Module for the selected investment.

Universe Functions

- **Universe** – Reads investment returns for the current universe and displays the **Asset Allocation Window**.
- **Statistics** (Universe) - Displays the Multi-Investment Statistics Window for the current universe.
- **Charts** (Universe) - Loads the Multi-Investment Charting module for the current universe.
- **View** – Allows you to select four qualitative fields from **General** tab on the **Investment Information** window, to view on the universe currently open in the **Home** window.
- **Search** - Displays the **Create New Universe** Window, which allows for user-specified information or statistical searches.
- **Search Log** - Displays the Search Log Window that details the results of the most recent search.

PerTrac Advanced Features

- **Peer** – Launches the PerTrac **Peer Group Analysis** module.
- **Style** – Launches the **Style and Benchmark Analysis** module.
- **Sim** – Launches the **Portfolio Simulation and Stress Testing** module.

Status Bar

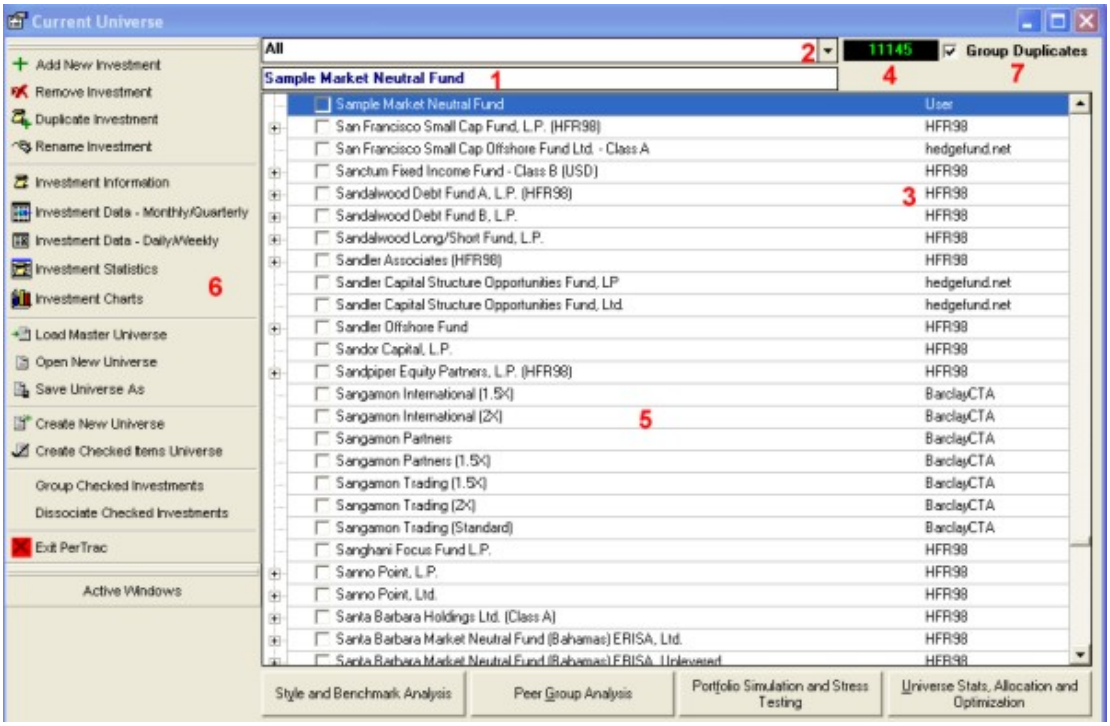
The status bar is located at the bottom of the **Master Window**. It displays (from left to right):

- The name of the current active investment
- The name of the current active universe
- The number of investments in the current universe
- Current date and time

During a search or portfolio calculation, the investment display at the far left is updated to show the investment currently being processed. Since all operations process investments in alphabetical order, viewing this part of the status bar during an operation will give you an indication of the progress of the operation. Also, when an operation is being performed, a small flashing clock will appear in the status bar until the operation has finished.

2.02 - The Current Universe Window

The **Current Universe Window** is the gateway for all activity in PerTrac. When PerTrac is launched, the **Current Universe Window** automatically appears within the **Master Window** with "All.unv" as the current universe.



NOTE – the **"All.unv"** always consists of each investment in the current database and can be rebuilt at any time by clicking the **Load Master Universe** button.

The **Current Universe Window** contains the following sections as shown in the screen capture above.

1. **Current Investment Box-** displays the source name of the current investment.
2. **Current Universe Box -** displays the list of saved universes in your default universe folder.
3. **Data Source -** displays the Data Source of the selected investment.
4. **Number of Investments -** displays the total number of investments in the current universe.
5. **Investment List Box -** displays alphabetic listing of each investment in the current universe.
6. **Command Buttons -** initiate a variety of functions.
7. **Group Duplicates -** This is a new check box located on the upper right-hand side of the Home window. When Group Duplicates is checked all identical funds will be grouped by way of a new tree format located just to the left of the fund names. Plus and minus signs will expand and contract the duplicate funds. When the Group Duplicates box is unchecked all funds will be listed in the Home window without the new tree structure. The black box containing the number of funds in the Home window will change when the Group Duplicates box is checked. When unchecked the total number of funds will be shown, when checked the black box will show the number of unique funds (no duplicates).

Selecting an Investment

While working with single investments, all operations are performed on the currently selected investment. To *select* a particular investment from the current universe, click on the investment name in the **Investment List Box** or click in the **Investment Box** and type the first few letters of the investment name. This is a shortcut that will move you down the list more quickly than simply scrolling.

Current Universe Window Command Buttons

Available in all versions of Pertrac

The command buttons are located down the left hand side of the Current Universe Window. Below you will find a brief description of each command.

-

- This function allows you to create your own funds, managers, indices, or other investments. When a new investment is created, its name is added to the Master Universe of the active database. Investment information and investment performance data

for the new investment can then be added by highlighting the new investment name and clicking either the **Investment Information** button or the **Investment Data** button.

- Remove Investment - Clicking the **Remove Investment** button from the **Current Universe Window** allows you to delete an investment and its related files from the Master Universe ("all.unv"). Since investments can only be removed from the Master Universe, the Master Universe must be loaded in the **Current Universe Window** before attempting to remove an investment.

> **!!NOTE**: Once an investment is removed from the Master Universe, all information and data are lost and are irrecoverable. On network or multi-user systems, this function may be restricted to the system administrator.

- Duplicate Investment - Creates a copy of the selected investment with same qualitative information and performance data.
- Rename Investment - Renames the investment but keeps the information and performance intact.
- Investment Information - Opens the **Investment Information Window**, which contains qualitative information about the current investment.
- Investment Data - Monthly/Quarterly - Opens the **Investment Data Window**, where you can enter, view and edit the monthly or quarterly performance data for the current investment.
  - Investment Data - Daily/Weekly - Opens the **Investment Daily/Weekly Data Window,** where you can add and edit daily or weekly performance.
- Investment Statistics - Opens the **Investment Statistics Window**, which contains summary performance statistics for the current investment.
- Investment Charts - Opens the **Investment Charts Window**, where you can create charts on numerous performance and risk measures.
- Load Master Universe - Scans the entire database and builds and displays the Master Universe file "All.unv".
  - Open New Universe - Opens a dialogue box, allowing you to select a new universe.
  - Save Universe As - Opens a dialogue box, allowing you to save the current universe with a different name.

- Create New Universe - Opens the **Create New Universe Window**, where you can define a custom universe.
- Create Checked Items Universe - Opens the **Create New Universe Window**, and places the investments you have checked in the new universe column.
- Group Checked Investments – Allows you to check the boxes next to your fund names then convert your selections to be listed as a group.
- Dissociate Checked Investments – Allows you to un-group funds that were grouped with the **Group Checked Investments** option.
- Exit PerTrac - Closes all open windows and exits PerTrac.

Available with Standard and Advanced Versions

- Universe Stats, Allocation and Optimization - This opens the **Universe Allocation Window** that contains PerTrac's universe (multi-fund) analysis tools, portfolio construction, and asset allocation modeling with the Efficient Frontier and Linear Optimizers.

Available with Advanced Versions

- Style and Benchmark Analysis – Opens the **Style and Benchmark Analysis** module where you can perform style analysis, create style charts, and perform style-based searches.
- Peer Group Analysis – Opens the **Peer Group Analysis** module where you can thoroughly analyze and rank funds relative to their peers.
- Portfolio Simulation and Stress Testing – Opens the **Portfolio Simulation** module that builds probability distribution outcomes on numerous risk measures.

2.03 - Investment Information - View the online tutorial!

The **Investment Information Window** allows you to view and edit qualitative information related to the current investment. There are three main uses for the Investment Information Windows:

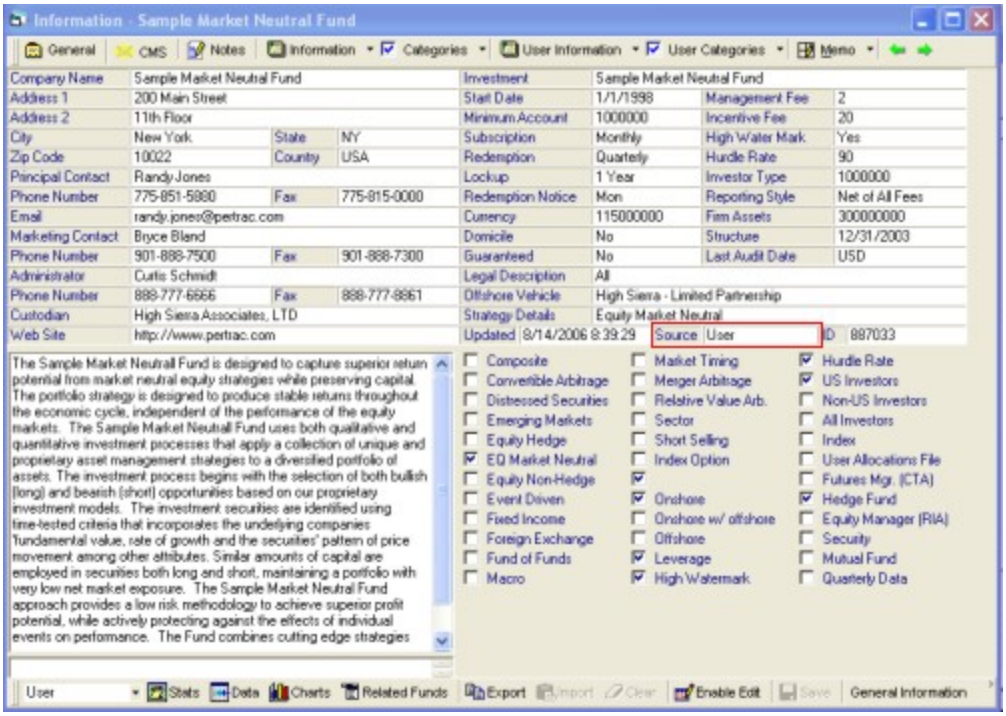
1. **Searches/Queries** – one of the five powerful search engines in PerTrac is the **Select by Information Search** option. The information search

criteria will consist of all data vendor or user entered qualitative fields on all of the investment information window tabs except the **Notes** tab.

2. **PerTrac Publisher Custom Reports** – all of the investment information window tabs, with the exception of the **Notes** tab, get exported with the PerTrac Publisher custom report generators. The investment information qualitative data can then be added to your custom report.
3. **User Information** – when you subscribe to data vendor databases you will have access to potentially hundreds of qualitative fields. However, you may want to compile your own information on those funds. The **NOTES, User Information, User Categories** and **User Memo** windows give you a large amount of space to add you own qualitative fund information.

There are three ways to open the **Investment Information Window**:

- Clicking the Investment Information command button from the **Current Universe Window**.
- Clicking the button labeled Info from the Tool Bar.
- Double-clicking on the investment name for which you wish to view information.



TIP: When you highlight a fund and click **Investment Information** button, or double click on a fund name to open the investment information window, the **General** information page is the default view.

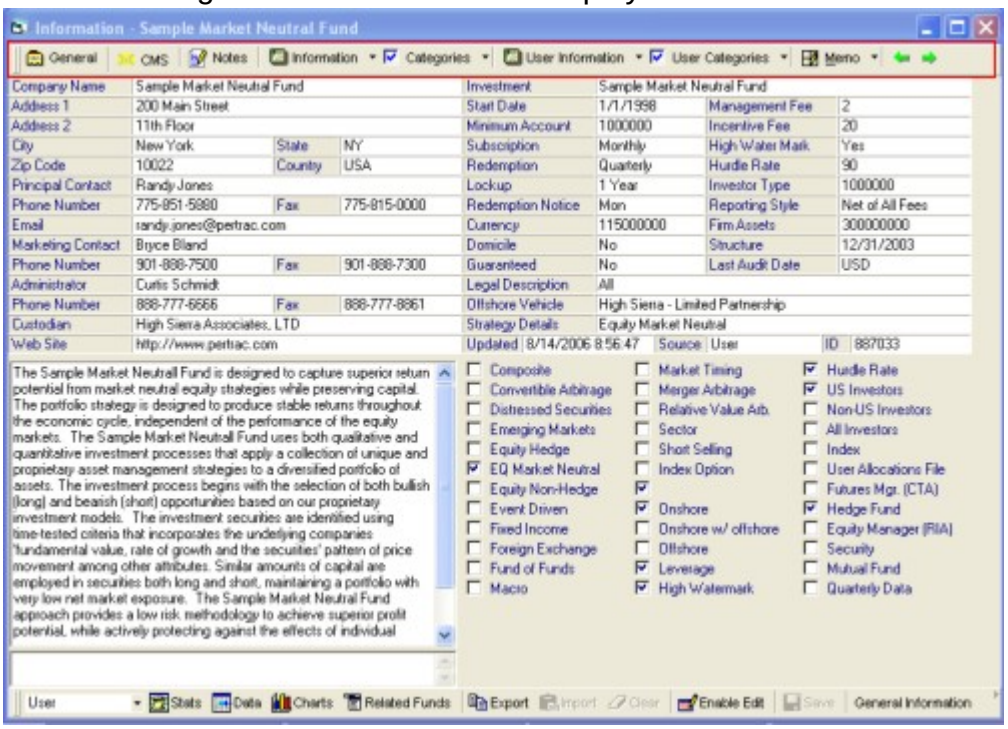
Initially, PerTrac will look for these description files in the program directory. You can, however, change the path to an alternate directory by changing your preferences.

1. Select **Default Description Files Folder** from the **Preferences** menu.
2. Locate and double-click on the desired folder.
3. Click **OK**.

TIP: This can be useful when sharing data over a network where several computers might have different versions of the description files. Sharing the description files folder ensures that all users are using the same labels.

Information Pages

By using the buttons at the top of the **Investment Information Window**, you can access eight different information displays.



They are: **General, CMS, Notes, Information, Categories, User Information, User Categories and Memo.**

1. General - The **General Investment Information** is automatically displayed when you open the **Investment Information Window** and includes fields such as company name, address, and phone numbers as well as investment-specific information such as start date, minimum account, and fees. If you purchase data, the database vendor supplies the

information in these fields and field names. User files can be programmed as desired. Clicking the **Enable Edit** button allows you to edit or add information. For information on editing information field labels see "Customizing Field Labels" later in this section.

The Investment Strategy Description box is located at the middle left of the **General** display of the **Investment Information Window**. This field is used for vendor-supplied descriptions of investment managers or for any other relevant information that is supplied by the data vendor and not found in the investment information fields above. The scroll bar allows you to view of the entire field. The contents of this field can be copied to another application by using the right-click functions to **copy** and **paste**.

NOTE – If you edit the **General Information** page by changing the field labels or values for an investment that is part of a data vendor database, your changes will be overwritten when you subsequently download and update that data vendor database.

The user-entered **Strategy Description** box is located directly below the **Program Description** box. Unlike the Investment Description box, the user-entered description will not be overwritten by data vendor updates. This field can hold up to 1 gigabyte of information. You can copy entire documents directly from, or paste the contents to, other applications using the clipboard. The scroll bar allows you to view the entire field. Clicking on the **Enable Edit** button allows you to enter information into the User Notes box.

NOTE – Data entered in the user description fields will not be overwritten when you update the data vendor database.

The 36 check boxes at the lower right of the window represent categories supplied by the data vendor or defined by the user (see **Customizing Field Labels** later in this section). They provide a general overview of the investment type, sectors traded, and trading style. To add or remove a check mark, click the **Enable Edit** button.

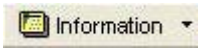
2.

- This button allows the user to interface with their CMS system. Once a fund has been linked from CMS to PerTrac, this option will access the fund in CMS from the PerTrac information window.

NOTE – You must have a subscription to the PerTrac Financial Solutions CMS product for this option to be available.

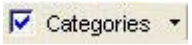
3. - The **Notes** section allows you to maintain notes with an automatic time-stamp. These re-sizable boxes are most often used to enter due diligence notes with a date and time stamp.

NOTE – Data entered in the user description fields will not be overwritten when you update the data vendor database.

4.  - The **Information** tab lists six windows with 50 fields/cells in each window. These windows and fields contain a variety of investment qualitative information supplied by the data-vendor. Each window can be customized by selecting **Set Information and Category Page Names** to rename each window, or **Specify Information Page Layout** to change the layout of the columns and rows. Both of these options are located on the menu bar **Preferences** tab.

NOTE: If you change the information page field labels or values for an investment that is part of a data vendor database, your changes will be overwritten when you download and update this particular data vendor database.

TIP: For both the **Information and User Information** windows, the cells in the first 4 windows will hold a maximum of 256 characters. Information windows 5 and 6 will hold 1 gigabyte of information. If the information you are attaching to an investment has a large amount of text, use the cells on information windows 5 and 6.

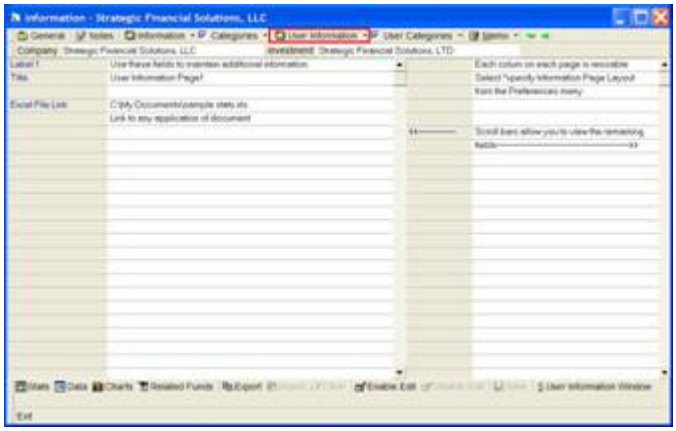
5.  - The **Categories** tab lists six **Category Windows**, which can be viewed either by repeatedly clicking the **Categories** button or by clicking the drag-down portion of the **Categories** button and selecting a specific window. There are 4 columns of check boxes on each **Category Window** that are defined by the data vendor. Each column contains 30 check boxes. To add or remove a check mark, click the **Enable Edit** button and click the appropriate box.

NOTE – If you edit the **Category Window** page by changing the field labels or values for an investment that is part of a data vendor database, your changes will be overwritten when you download and update this particular data vendor database.

6.

- Clicking the **User Information** button displays the first of six **User Information Windows**. These windows act just like the **Information Windows** described earlier, including custom sizing. The unique feature about the **User Information Windows**, however, is that the information stored here is not changed or overwritten during data-vendor updates. This allows you to store and customize the information in a way that best suits your needs.

User Information



In addition to storing text information, these fields can also be used as file links. These automatic links are designed to give you easy and convenient access to other files that you might maintain on a particular investment manager or fund (such as an Excel spreadsheet, a Word document or PowerPoint presentation file).

1. Click the **Enable Edit** button in the **Information Window**.
2. Double-click on any blank cell. The **Select Document to Launch** dialogue box appears.
3. Once you have found the file to which you wish to link, you may either double-click on it or click **Open** button. This opens the file with the appropriate program so that you can ensure you have made the correct link.
4. Close the selected file. Back in PerTrac, the linked cell now contains the path to the file you have chosen.
5. Click the **Save** button at the bottom of the **Investment Information Window** to save the link.

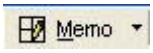
Once the link is established, you can open the linked file at any time by double-clicking on the linked cell. To clear a linked cell, click the **Enable Edit** button and delete the file path contained in the cell.

7.

- The **User Categories** tab lists six **User Category Windows**, which can be viewed either by repeatedly clicking the **User Categories** button or by clicking the drag-down portion of the **User Categories** button and selecting a specific window. There are 4 columns of check boxes on each **User Category Window** that are defined by the data vendor. Each column contains 30 check boxes. To add your own

Category, click the **Enable Edit** button, then click your right mouse button and select **Edit Label.** Type the label for your category, enter a check mark if this category applies, and then exit.

The **User Categories** windows are similar to the **User Information Windows** in that the information stored here is not changed or overwritten during data-vendor updates. This allows you to store and customize the information in a way that best suits your needs.

8. 

- The **Memo** section contains both a **System Memo** display and a **User Memo** display, each containing four resizable windows. The **System Memo** information will be provided by the data vendor, while the **User Memo** information is for your use and can be updated by clicking the **Enable Editing** button. Each memo field may contain approximately 1 gigabyte of information.

The **User Memo** windows are similar to the **User Category and User Information Windows** in that the information stored here is not changed or overwritten during data-vendor updates. This allows you to store and customize the information in a way that best suits your needs.

Tool Bar

The **Investment Information Window** contains its own tool bars that provide access to the available functions. Listed below are brief descriptions of the items highlighted on the Information window tool bars.

- Data source drop-down window. This window contains a list of your grouped duplicate data sources. Although you group your duplicate funds, you can toggle between multiple data sources in the information window to view qualitative data specific to each data vendor.
- The **Statistics**, **Data**, and **Charts** (

) buttons open those respective windows.
- With the **Export**, **Import**, and **Clear** (

) buttons, you can export a page of information to the **Clipboard**. From the Clipboard you can then import information to another investment's **Investment Information Window**.
- The **Enable Edit** (

) button at the bottom of the window must be activated before any fields in the window can be edited. Once you have edited the information for an investment, you can use the **Disable Edit** button or the **Save** button to complete the editing process.

- The **Exit** button in this window will the exit **Investment Information Window**. It does not exit the PerTrac program.
- The Current Window Label ( ) is shown between the **Save** and **Exit** buttons. This indicates the information window you are currently viewing.

TIP: Double-clicking on the e-mail address within a particular investment record will automatically launch an e-mail to an individual/company. Likewise, double-clicking on the web site address within a record will launch your web browser to access that site.

Customizing Field Labels

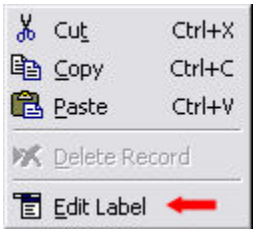
You can change the layout of both the **System Information** pages and **User Information** pages to suit your specific needs.

1. Select **Specify Information Page Layout** from the **Preferences** menu option.
2. When the **Enter Preferences For Information Tables Window** opens, select the window you wish to alter from the drag-down menu.
3. Select either 1 or 2 columns, keeping in mind that each column consists of a label column and an info column.
4. In either the Left Column Width or Right Column Width box, enter the width of the column as a percentage of available space (the other column will automatically take up the remaining space).
5. For each column, define the label width as a percentage of the entire column (the actual information will be stored in that column's remaining space).
6. For each column, choose a row height by entering the number of lines that will be visible.

NOTE: Keep in mind that the information that will go in these boxes is not confined to the size of the box. When there is more information than the box shows, you may view the remaining information by using the scroll bars.

Another way to customize the **Information** and **User Information** pages, as well as both the **Categories** and **User Categories** pages, is by changing the field labels.

1. From one of the Information or Category Pages, click the **Enable Edit** button.
2. Right-click over the label you wish to change.
3. Select **Edit Label.**



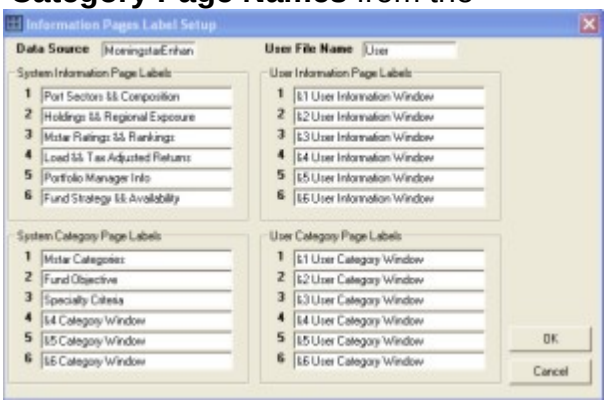
4. Change the caption in the desired label.
5. Click the **Disable Edit** button.
6. When asked if you want to save investment information, click **Yes**.

TIP: For all files supplied by data vendors, changes made to any non-user items will be lost when the database is updated. For this reason these fields should only be edited on **User** files. For data-vendor supplied files, use only the User Information, User Categories, NOTES, and Memo pages to further customize data vendor records.

Renaming Information and Category Pages

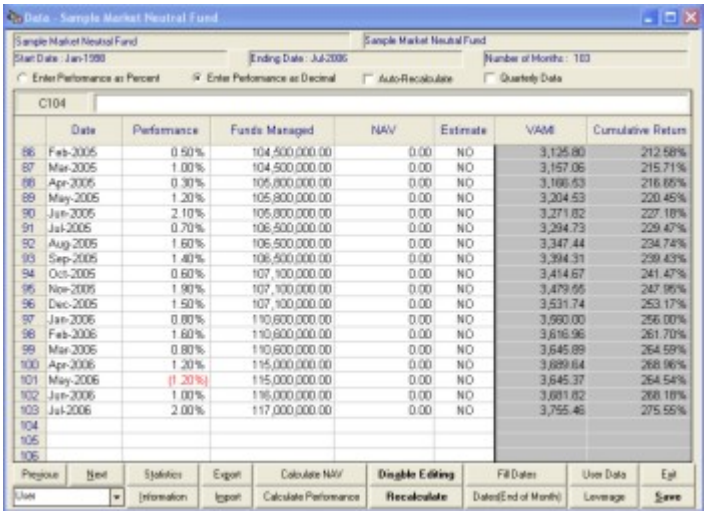
Customizing the names of the 24 Information and Category pages can help you more quickly identify the location of the information in a record.

1. Select **Set Information and Category Page Names** from the **Preferences** menu. The Data Source box will display the source of the current investment.
2. Replace page names as desired. Placing an ampersand (&) before a letter allows you to use that letter to select the page while the menu is displayed.
3. Click **OK**


Information Pages Label Setup
Data Source
MorningstarEnhan
User File Name
User
System Information Page Labels
1 Port Sectors && Composition
2 Holdings && Regional Exposure
3 Mstar Ratings && Rankings
4 Load && Tax Adjusted Returns
5 Portfolio Manager Info
6 Fund Strategy && Availability
User Information Page Labels
1 &1 User Information Window
2 &2 User Information Window
3 &3 User Information Window
4 &4 User Information Window
5 &5 User Information Window
6 &6 User Information Window
System Category Page Labels
1 Mstar Categories
2 Fund Objective
3 Specialty Catesa
4 &4 Category Window
5 &5 Category Window
6 &6 Category Window
User Category Page Labels
1 &1 User Category Window
2 &2 User Category Window
3 &3 User Category Window
4 &4 User Category Window
5 &5 User Category Window
6 &6 User Category Window
OK
Cancel

2.04 - Investment Data - View the online tutorial!

The **Investment Data Window** allows you to view and edit the performance data for the current investment. You can open the **Investment Data Window** by clicking the Investment Data command button from the **Current Universe Window** or by clicking the button labeled Data from the **Tool Bar**.



Investment Data Window

At the top of the window are fields showing the manager name, investment name, start and end dates, and the number of monthly periods in the data table. Below these fields is the standard data table. For data-vendor provided files, the data table is updated each time the user updates the vendor database; user-entered data, however, must continue to be updated manually.

The data table includes columns for **Date**, **Performance** (percent return), **Funds Managed**, **NAV** (Net Asset Value), **VAMI** (Value Added Monthly Index), and **Cumulative Return**. The table also contains an **Estimate** column, which allows you to flag the rows of data that contain estimated performance values. Only the first five columns require data entry, while the **VAMI** and **Cumulative Return** columns contain locked cells that are calculated automatically.

Note: The drop-down window on the lower left allows you to toggle between data vendors when you have duplicate investments grouped.

The **Previous** and **Next** buttons at the bottom of the screen allow you to view data from other investments within your universe. Finally, the **Statistics** and **Information** buttons allow you to move directly to those windows, as in the **Current Universe Window**.

2.05 - Adding Performance Data - View the online tutorial!

Adding Monthly Performance Data

All new investments will initially require that a data stream is entered in the **Investment Data Window**. All existing investments (with the exception of those supported by your data-vendor, which are updated when you download a new database) also require monthly or quarterly updates as performance data becomes available.

1. From the **Current Universe Window**, highlight an investment and click the **Investment Data** ( ) button.
2. If you are adding data to a newly created investment, you will see a message telling you that there is no data for this investment. Click **OK**.
3. The next window will ask if you want to enter data in quarterly format. If you will be entering monthly data, select **No.**
4. Click the **Enable Editing** button at the bottom of the **Investment Data** window. Notice how the button is renamed as **Disable Editing**. Enabling editing allows additional functionality to become active. Some of the buttons at the bottom of the window will change from grayed out text (inactive) to black text (active). Also, you will notice a formula bar appears just above the data table, which displays the contents of the current cell.
5. If you are adding a new row to an existing data record, PerTrac will automatically fill in the next date. Otherwise, you can enter the date by typing it in month/year format. For example January, 1990 can be entered as either “1/90” or “1-90”. If you would like to enter dates for several rows at a time, drag a selection which encompasses both the most recently entered date and all the cells in which you would like to enter dates, then click **Fill Dates**. Also, since the month/year date format assumes that the date is the first of the month, you may want all the dates to indicate the last day of the month. To do this, highlight all the dates that you would like to alter, then click **Dates (End of Month)**. While the day of the month will not be displayed in the cell itself, the change can be viewed in the Cell Contents Field, just above the data table.
6. Move to the **Performance** column either by hitting the Tab key or by clicking on the appropriate cell. You may enter percent or decimal format by selecting ether **Enter Performance as Percent** (for example 2.5% entered as 2.5) or **Enter Performance as Decimal** (for example 2.5% as .025)
   (

) button just above the formula bar.

7. Alternatively, you can copy an entire series of data from a spreadsheet and paste it into the date and performance columns.
8. If you are tracking the dollars under management for the investment or a fund NAV you can enter the **Dollars Managed** and **NAV** in their respective columns. If you do not know, or do not care to track, the Dollars Managed or the NAV, you can leave the fields blank and PerTrac will fill in zeros when the data record is calculated. Similarly, PerTrac will automatically enter "NO" in any blank cells in the **Estimate** column.
9. Continue to fill in the appropriate cells for each row that contains a date.
10. Once you have entered all the data, click the **Recalculate** button at the bottom of the window to update the **VAMI** and **Cumulative Return** columns. Since PerTrac recalculates the figures automatically when you use the **Save** option, it is not mandatory that you click the **Recalculate** button. However, you may find it useful to use the **Recalculate** button to view the recalculations for yourself before saving.
11. When you are finished, click the **Save** button, then the **Disable Editing** button. If you click the **Disable Editing** button without having clicked the **Save** button, PerTrac will ask if you want to save your data. If you do not save your data before you exit the **Investment Data** window, any changes you have made since your last save will be lost.

Adding Quarterly Performance Data

To add quarterly investment data, follow the instructions listed above, but click YES when asked if you would like to enter quarterly data.

Editing Performance Data

To edit data, highlight the appropriate cell, then click **Enable Editing** button. After entering data in a cell, you can move to the next cell by hitting the **Tab** key or by clicking on the desired cell. You can clear the contents of any cell by right clicking and selecting **Clear**. The right-click menu can also be used for **Cut**, **Copy,** or **Paste** functions or for **Inserting** or **Deleting Rows** in the data table.

If you have entered a value in the **Performance** column and wish to recalculate the NAV, highlight at least two cells to be recalculated in the **NAV** column and click the **Calculate NAV** button. Conversely, if you have entered a new NAV and wish to recalculate the **Performance**, highlight at least two cells to be recalculated in the **Performance** column and click the **Calculate Performance** button.

When all the data has been edited as desired, click the **Save** button, then the **Disable Editing** button.

2.06 - Updating User-Entered Performance - Monthly Data Entry Form - View the online tutorial!

Although the **Investment Data Window** allows you to edit all the data for a single investment, you may wish to enter data for several investments at once, such as when new monthly performance data becomes available for a portfolio of managers. This can be accomplished by using the **Monthly Data Entry Form**.

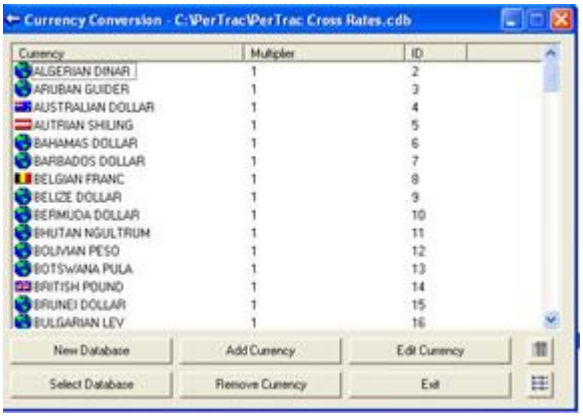
1. Open the universe of funds you wish to update at the **Home** window. If you do not open the universe, PerTrac will default to the **All.unv**, or entire database. PerTrac will then try to load the entire database into the Monthly Data Entry Form, which could crash your PerTrac.
2. From the **Tools** menu, select **Monthly Data Entry Form**.
3. In the **Date** box, located on the lower left hand side of the window, enter the month and year for which you would like to enter data.
4. Click the **Load** button. PerTrac will display all of the data for each investment in the current universe for 3 consecutive months, ending with the month you selected.
5. Enter and edit the data as needed.
6. Click the **Save** button. If you do not save your data before you exit the **Monthly Data Entry Form** window, any changes you have made since your last save will be lost.
7. Exit the **Monthly Data Entry Form**.

2.07 - Currency Conversion

The **Currency Conversion** tool allows you to convert investment returns from one currency to another. Currency conversion can be performed on a single fund or a universe of funds.

Single Fund Currency Conversion

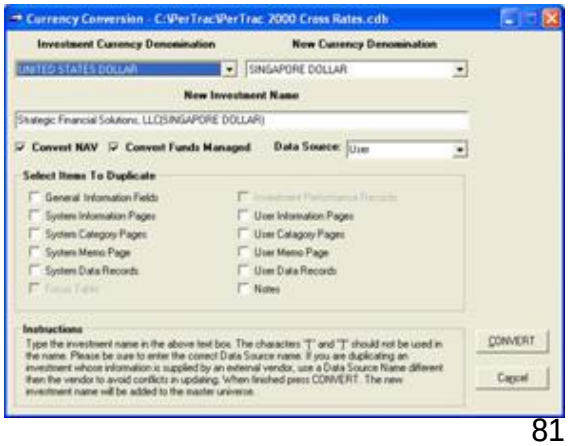
Select the investment you wish to convert, then, from the **Tools** menu, select **Currency Conversion**. There are three options: **Convert Investment to New Currency, Convert Universe to New Currency and Edit Cross Rate Database.** Prior to converting the investment or universe to a new currency the **Cross Rate Database** must be updated.



1. The Cross Rate Database can be edited by selecting **Edit Cross Rate Database** from the **Currency Conversion** section of the **Tools** menu. Click the **Select Database** button on the lower left hand side of the window. When the file selection window appears, select the file "PerTracCrossRates.cdb" and click **Open**. A list of currencies will now be listed in the window. You can now **Add, Remove,** or **Edit** Currencies.

NOTE: New currency rates must be entered each month. The currencies that come pre-loaded have not been updated since September, 1999. However, we now upated the G7 currency rates, which can be updated monthly from the **Utilities/Documentation** link on our Training & Support (http://pertrac.com) site. Each month you will **Save** the new "PerTracCrossRates.cdb" file to your PerTrac main folder.

2. Once the **Currency Cross Rate Database** has been updated, click the **Convert Investment to New Currency** option. Select the currencies of both the current investment and the new investment. The new investment name is listed



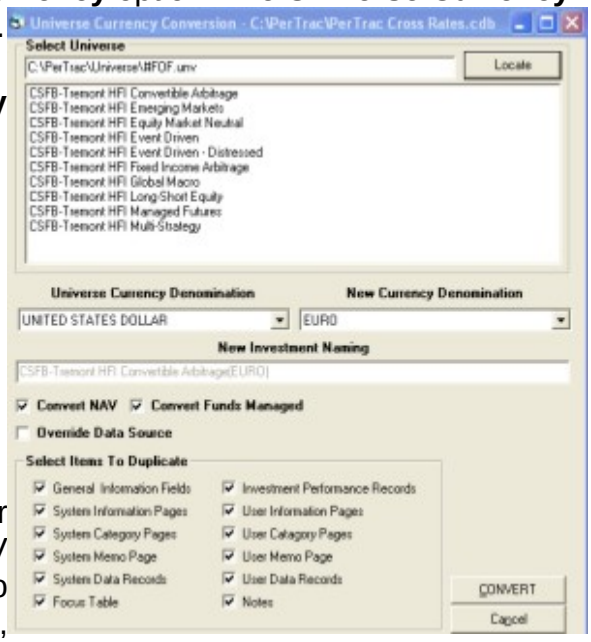
under the **New Investment Name** label.

3. Select a Data Source from the drop down list (typically the data source will be “User”)
4. Optional conversion check boxes are available to convert NAV and Funds Managed.
5. Other record items can be duplicated by checking the corresponding boxes.
6. Once all the settings have been made, click the **Convert** button.

Universe Currency Conversion

From the **Tools** menu, select **Currency Conversion**. Then select **Convert Universe to New Currency.** Prior to converting the investment or universe to a new currency the **Cross Rate Database** must be updated. See **Note** above.

1. Once the **Currency Cross Rate Database** has been updated, click the **Convert Universe to New Currency** option. The **Universe Currency Conversion** window appears.

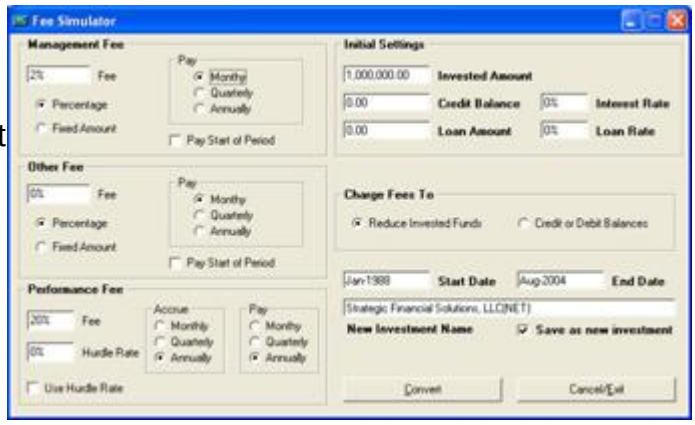


2 When the **Universe Currency Conversion** window appears click the **Locate** button to open the universe to be converted.

3. Select the existing **Universe Currency Denomination** to be converted and then select the **New Currency Denomination** to be converted to.
4. Elect to **Convert NAV** (if your fund data sheet contains NAV vaules that you would like to convert to the new currency), **Convert Funds Managed** (if you want this data also converted to the new currency), or to **Override Data Source**.
5. Select the qualitative information to be duplicated under the **Select Items To Duplicate** section.
6. Once all the settings have been made, click the **Convert** button.
7. The new investments have been added to your database. The default name for the new funds will be the old name with the new currency in parenthesis behind the name.

2.08 - Fee Simulator

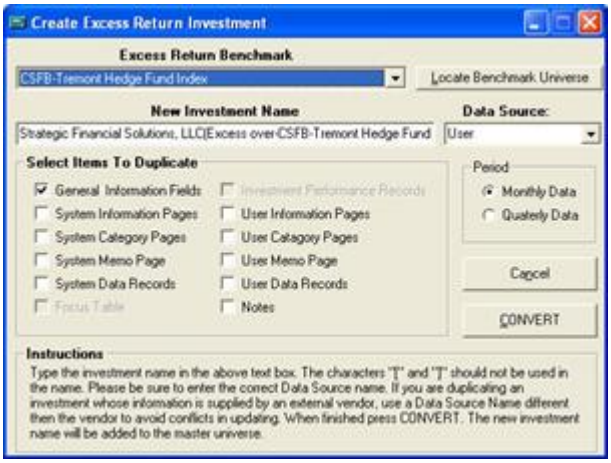
The Fee Simulator provides the option of adjusting an investment's performance for various fees and interest rates. Select the investment you wish to adjust and select **Fee Simulator** from the **Tools** menu.



1. When the **Fee Simulator** window opens, enter the applicable fee percentages and payment frequencies.
2. In the **Initial Settings** section, enter the invested amount, along with any credit or loan amounts (leverage) along with their corresponding interest rates.
3. Using the option buttons, fees can be charged to either the invested funds or credit/debit balances.
4. Enter the desired start date and end date.
5. Checking the **Save as new investment** to add the new record your database.
6. Click **Convert.** A new window will appear that contains investment information to duplicate into the new "Net" investment record. Click **Save** to create the new "Net" of Fees" investment.

2.09 - Excess Return Conversion

A data stream can be created which reflects the difference (excess return) between an investment and a benchmark. Choose the investment you wish to convert to an excess return stream and then select **Excess Return Conversion** from the **Tools** menu.


Create Excess Return Investment
Excess Return Benchmark
CSFB-Tremont Hedge Fund Index
Locate Benchmark Universe
New Investment Name
Strategic Financial Solutions, LLC(Excess over-CSFB-Tremont Hedge Fund
Data Source:
User
Select Items To Duplicate
General Information Fields
System Information Pages
System Category Pages
System Memo Page
System Data Records
Focus Table
Investment Performance Records
User Information Pages
User Catagory Pages
User Memo Page
User Data Records
Notes
Period
Monthly Data
Quarterly Data
Cancel
CONVERT
Instructions
Type the investment name in the above text box. The characters "[" and "]" should not be used in the name. Please be sure to enter the correct Data Source name. If you are duplicating an investment whose information is supplied by an external vendor, use a Data Source Name different then the vendor to avoid conflicts in updating. When finished press CONVERT. The new investment name will be added to the master universe.

1. Select a benchmark from the pull down menu.

2. Select the Data Source. By default the data source is “User”. We recommend that you keep this setting.
3. Check the boxes that correspond to the qualitative data you wish to duplicate in the new record.
4. Select the period, **Monthly Data** or **Quarterly Data**.
5. Click **Convert**.

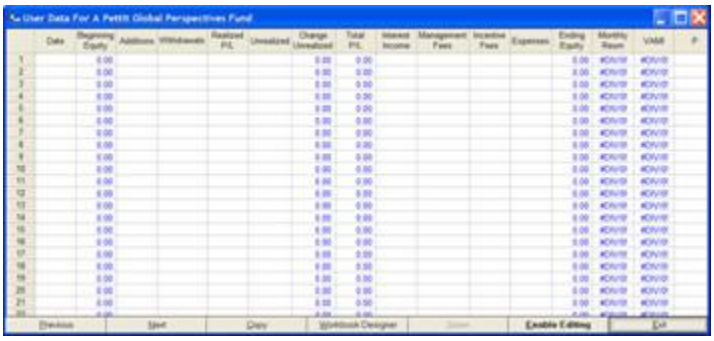
2.10 - Investment Data Window Command Buttons

- **Previous** - Displays the data for the previous investment in the current universe list.
- **Next** - Displays the next investment in the current universe list.
- **Statistics** - Displays the **Investment Statistics Window** for the current investment.
- **Information** - Displays the **Investment Information Window** for the current investment.
- **Export** - Copies the current data record (including column headings) to the clipboard.
- **Import** - Pastes contents of the clipboard into the current **Investment Data Window** after checking for formatting or other errors.
- **Calculate NAV** - Uses the values in the **Performance** column to calculate a NAV for the same month (the appropriate cells in the **NAV** column must be highlighted).
- **Calculate Performance** - Uses the values in the **NAV** column to calculate the performance for the same month (the appropriate cells in the **Performance** column must be highlighted).
- **Enable Editing** - Allows users to edit the **Investment Data Table**.
- **Disable Editing** - Prevents users from editing the **Investment Data Table**.
- **Recalculate** - Updates the **VAMI** and **Return to Date** columns of the **Investment Data Table** based on the values in the **Performance** column.
- **Fill Dates** - Uses the last highlighted date as a reference to fill any blank highlighted cells with dates.
- **Dates (End of Month)** - Converts all highlighted dates to reflect the last day of the month.

- **User Data -** Displays the **User Data Table** (see below).
- **Leverage -** Displays the **Leverage Data Table** (see below).
- **Daily Data -** Opens the Daily Data entry and analysis window.
- **Exit** - Closes the **Investment Data Window**.
- **Save** - Saves all data in the **Investment Data Window**.
- **Data source drop-down window** - This window contains a list of your grouped duplicate data sources. Although you group your duplicate funds, you can toggle between multiple data sources in the information window to view qualitative data specific to each data vendor.

User Data Table

In addition to the standard **Investment Data Table**, PerTrac includes an expanded **User Data Table** that allows you to track up to 20 columns of performance-related information such as additions, withdrawals, realized and unrealized P&L, interest income, and fees. This table is ideal for tracking investment funds or customer accounts on a very detailed level. To access the **User Data Table**, click the **User Data** button at the bottom right of the **Investment Data Window**.



NOTE: This is a stand-alone table intended for compiling historical data. The data in this table is not linked to other PerTrac tables. This table is available for export into PerTrac Publisher. As a result, if you want to include data from this data on your custom template, the table will be available.

User Data Table Formulas

The initial setup for the **User Data Table** consists of 15 pre-defined columns, some of which contain formulas. Four of the columns that contain formulas will initially show a value of zero, since they are referencing cells that are either initially blank or initially contain zeros. Other formulas will initially return an error message that indicates that the formula is attempting to divide by zero. These zeros and error messages will be replaced with actual numbers as you enter the investment data on which the formulas make their calculations. The following columns contain formulas:

- **Beginning Equity** - Except for the first row, which requires a value to be entered, beginning equity for any month is equal to the ending equity from the prior month.
- **Change Unrealized** - Unrealized P/L for the current month - Unrealized P/L for the prior month.
- **Total P/L** - Realized P/L + Change in Unrealized P&L.
- **Ending Equity** - Beginning Equity + Additions + Withdrawals + Total P/L + Interest Income + Management Fees + Incentive Fees + Expenses.
- **Monthly Return** - (Ending Equity/(Beginning Equity + Additions + Withdrawals))-1
- **VAMI** - Prior Month VAMI * (1+Monthly Return). In the first month, the formula is 1000 * (1+Monthly Return).

Clicking the **Previous** and **Next** buttons allows users to navigate through the **User Data Tables** for other investments within the current universe. The **Copy** button allows you to copy data in the same way as you would from the **Investment Data Window**.

Entering or Editing Data in the User Data Table

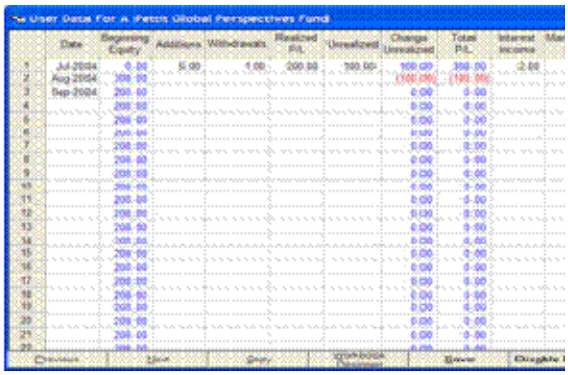
The **User Data Table** works in much the same way as the other spreadsheets within PerTrac.

1. In the **User Data Window**, click **Enable Editing** at the bottom of the window.
2. Enter the data, using the arrow keys to move from cell to cell in the table.
3. When all data has been entered, click **Save**.
4. Click **Disable Editing**.

NOTE – Values that decrease equity, such as withdrawals, must be entered as negative numbers in the **User Data Table**. Negative numbers will appear in red and in parentheses.

User Data Table Workbook Designer

In addition to the normal entering and editing of data in the User Data Table,, you may want to print the **User Data Table** or to



reformat the overall look of the table and save your changes for future reference. You can print and reformat the **User Data Table** using the **Workbook Designer**, which brings up a copy of the **User Data Table** that can be edited.

1. Click **Workbook Designer** button at the bottom of the **User Data Table** window. A spreadsheet with full editing, formatting, and printing capabilities will appear.
2. Format the spreadsheet using the options on the menu bar. To change a column heading, double-click on it to open **Header Name** dialogue box. To enter a formula, select the relevant cell and enter the formula as you would in any Excel™ (any existing formula for the cell will be visible in the **Formula Bar**). The **Formula One Workbook Designer** has a built in Help index to guide you through additional tasks. (See **Using the Workbook Designer** for more information.)
3. When the formatting is complete, select **Write** from the **File** menu or click the **Write**.
4. When the **Write** dialog box appears, give the file a new name. The name can be anything except the default filename for the **User Data Table** ("UserDefaultTable.vts").
5. Click **Save**.

Once you have created a customized spreadsheet, you can re-open it choosing **Read** from the **File** menu.

Changing the User Data Table Universal Format

Although the method described above allows you to change the format of a particular spreadsheet, you may wish to change the initial appearance, or Universal Format, of the **User Data Table** for all of your investments. Once defined, the format for the **User Data Table** becomes universal throughout PerTrac. This means that the column definitions, formulas and other formatting will be the same for all investments while using the **User Data Table**.

1. From **Tools** tab on the menu bar select **Workbook Designer**. This will open the **Formula One Workbook Designer** program, which is included with the **PerTrac** software.
2. Once inside the **Workbook Designer**, click **Open** on the **File** menu.
3. Select "**UserDefaultTable.vts**" from the PerTrac directory and click **Open**. This will open the default **User Data Table** format.
4. Set up the data table as you would an individual **User Data Table**, keeping in mind that this will be the setup for the **User Data Table** for each investment.

5. Once you have finished formatting, select **Save** from the **File** menu or click the **Save** button.
6. When the **Save** dialogue box opens, save your work under the same name ("**UserDefaultTable.vts**").
7. When asked if you want to replace the existing file, click **Yes**. Your new **User Data Table** will replace the pre-formatted table and will automatically open when the **User Data Table** button is clicked.

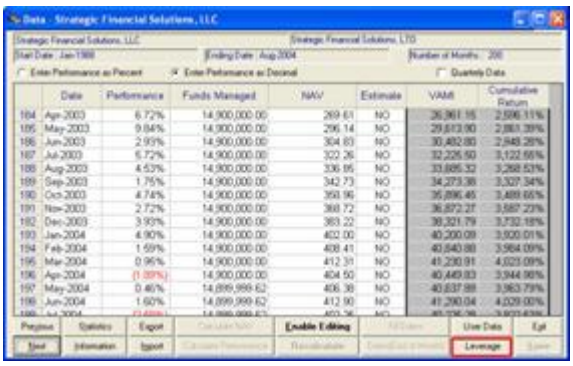
User Data Table Command Buttons

- **Previous** - Displays the **User Data Table** for the previous investment in the **Current Universe**.
- **Next** - Displays the **User Data Table** for the next investment in the **Current Universe**.
- **Copy** - Copies the current User Data Table (including column headings) to the clipboard, which you can then paste to another spreadsheet program.
- **Workbook Designer** - Displays the editable **Workbook Designer** spreadsheet for the current **User Data Table**.
- **Save** - Saves data input into the **User Data Table**. This button will not save format changes made to the table using the Workbook Designer (See Changing the User Data Table Universal Format above).
- **Enable Editing** - Allows users to edit the **User Data Table**.
- **Disable Editing** - Prevents users from editing the **User Data Table**.
- **Exit** - Closes the current **User Data Table**.

Leverage Data Table

In much the same way as the **User Data Table**, the **Leverage Data Table** allows you to keep additional data on the investments in your database. To access the **Leverage Data Table**, click the **Leverage** button at the bottom right of the **Investment Data Window**.

From the **Leverage Data Window**, click **Enable Editing** button at the bottom of the window.



1. When entering dates, NOTE that the **Fill Dates** and **Dates (End of Month)** buttons work the same way as in the **Investment Data Window**.
2. **Long**, **Short**, and **Net** columns are available for both Leverage

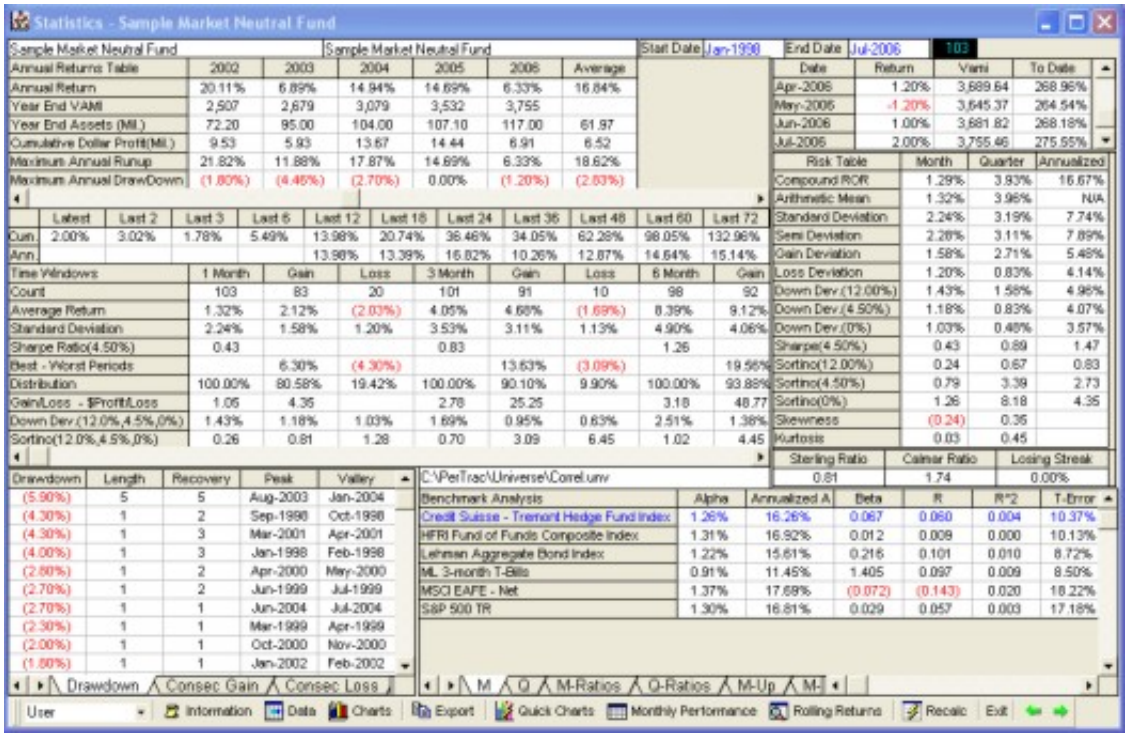
and Invested data.

3. When all data has been entered, click **Save**.
4. Click **Disable Editing**.

NOTE: The Leverage Data Table is a stand-alone table for compiling historical data. The data in this table is not linked to other PerTrac tables. However, this table can be exported into PerTrac Publisher. As a result, if you wish to include data from this table on your template, it is available.

2.11 - Investment Statistics - View the online tutorial!

The **Investment Statistics Window** displays summary performance statistics for a single investment. You can open the **Investment Statistics Window** by clicking the **Investment Statistics** command button located on the left hand side of the **Current Universe Window,** or by clicking the button labeled **Stats** from the **Tool Bar**.



At the bottom of the **Investment Statistics Window**, you will see the **Next** and **Previous** buttons (the left and right green arrows), which allow you to view the statistics of other investments in the current universe. Also, you will notice the usual **Information**, **Data**, and **Charts** buttons, which open those respective

windows in the same way as the **Tool Bar** in the **Master Window**. Finally, clicking **Exit** at the lower right will close the **Investment Statistics Window**. The remaining buttons will be discussed later in the manual.

Note: The drop-down window on the lower left allows you to toggle between data vendors when you have duplicate investments grouped.

Statistics Tables - Statistics Definitions

The **Investment Statistics Window** contains the following statistical tables:

1. Annual Statistics
2. Cumulative and Annualized Returns
3. Time Windows
4. Drawdown
5. Monthly Performance
6. Risk Table
7. Correlation Analysis

When the window is opened, statistics will be calculated and displayed over the entire performance history of the investment. If you wish to calculate the statistics over a different period, you may enter these dates manually in the **Start Date** and **End Date** fields at the top right of the window. Once a new date is entered in either of these fields, PerTrac automatically recalculates all statistics to reflect the new date range.

Annual Statistics Table

The Annual Statistics Table is located at the top left of the window and contains the following six rows of data for each calendar year:

Annual Returns Table	2000	2001	2002	2003	2004	2005	Average
Annual Return	(1.33%)	(6.76%)	(19.07%)	22.69%	9.69%	(1.47%)	2.92%
Year End VAMI	1,141	1,064	861	1,056	1,158	1,141	
Year End Assets (Mil.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cumulative Dollar Profit(Mil.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum Annual Runup	8.45%	13.21%	9.84%	29.44%	12.75%	0.00%	16.75%
Maximum Annual DrawDown	(8.46%)	(18.07%)	(23.37%)	(5.21%)	(5.90%)	(1.47%)	(13.15%)

- **Annual Return** - The total cumulative percent return for the year.
- **Year End VAMI** - The amount that $1000 invested the investment's at inception would be worth at the end of the calendar period.
- **Year End Assets** - Total Assets Under Management (in millions) in the investment at year-end.
- **Cumulative Dollar Profit** - The total profit/loss in dollars (in millions) from the investment's inception to the end of the calendar year.
- **Maximum Annual Runup** - The maximum percentage increase from an equity low to an equity high during the calendar year.

- **Maximum Annual Drawdown** - The maximum percentage decrease from an equity high to an equity low during the calendar year.

Recent Returns Table

The **Recent Returns Table** is located just below the **Annual Statistics Table** on the left side of the window. This table contains the cumulative and annualized returns covering various periods from the latest month through 120 months.

Time Windows Table

The **Time Windows Table** is located below the **Recent Returns Table** and displays nine rows of information for each rolling time period. A time windows statistic is derived by calculating the statistic for each rolling period. The table displays statistics for 1, 3, 6, 12, 18, 24, 36, 48 and 60 month rolling periods.

Time Windows	1 Month	Gain	Loss	3 Month	Gain	Loss
Count	79	42	37	77	43	34
Average Return	0.26%	3.37%	(3.27%)	1.05%	6.06%	(5.29%)
Standard Deviation	4.22%	2.26%	2.95%	7.22%	4.43%	4.56%
Sharpe Ratio(2.16%)	0.02			0.07		
Best - Worst Periods		8.45%	(15.18%)		17.41%	(16.19%)
Distribution	100.00%	53.16%	46.84%	100.00%	55.84%	44.16%
Gain/Loss - $Profit/Loss	1.03	1.17		1.15	1.45	
Down Dev (15.0%,2.2%,0%)	3.64%	3.09%	3.00%	6.64%	4.89%	4.61%
Sortino(15.0%,2.2%,0%)	-0.25	0.03	0.09	-0.38	0.10	0.23

There are three columns for each rolling period. The first column shows the statistics for all rolling periods. The **Gain** column shows the statistics for each rolling period in which the investment posted a gain. The **Loss** column shows the statistics for each rolling period in which the investment posted a loss. Some rows of data use these three columns in different ways, depending on the nature of the statistic. The **Time Windows Table** repeats these three columns for each rolling period length.

The following statistics are displayed in the Time Windows Table:

- **Count** - The number of rolling periods that fall within the **Start Date** and **End Date**.
- **Average Return** - The average arithmetic return for each rolling period.
- **Standard Deviation** - The standard deviation of the average arithmetic return for each rolling period.
- **Sharpe Ratio** - The average arithmetic return less the arithmetic risk-free return (annual risk free rate displayed in parentheses) divided by average arithmetic standard deviation.

- **Best/Worst Periods** - Displays the best arithmetic return for the particular rolling period in the **Gain** column and the worst arithmetic return in the **Loss** column.
- **Distribution** - The number of gaining or losing rolling periods divided by the total number of rolling periods. Percentages in the **Gain** and **Loss** columns will total 100%.
- **Gain/Loss $Profit/Loss** - The first column shows the ratio of average gain period to average loss period. The second column shows the ratio of (Average Gain x % Gain Distribution) divided by (Average Loss x % Loss Distribution).
- **Down Deviation (Downside Deviation)** - Measures the deviation of only those data points that fall below a certain return. The statistic is calculated on three possible returns: Minimum Acceptable Return (MAR), Risk-Free rate of return, and Zero. The Minimum Acceptable Return (MAR) can be changed on the **Tools** tab under **Default Minimum Acceptable and Risk Free Returns**. The Risk-Free return, which is used for the calculation of Downside Deviation, Sortino Ratio and Sharpe Ratio, can also be changed **under Default Minimum Acceptable and Risk Free Returns**. The Zero return calculation is a default and can not be changed.
- **Sortino Ratio** - The arithmetic average period return less the Minimum Acceptable Return (MAR, Risk-Free, Zero) divided by the downside deviation from the MAR. Just as with the Down Deviation calculation, the Sortino is calculated on the 3 assumptions for MAR shown in parentheses.

Drawdown Table

The Drawdown Table is located at the bottom left of the window and consists of three tabs – **Drawdown**, **Consec Gain**, and **Consec Loss**. The **Drawdown** tab contains a complete history of all equity drawdowns since inception, ranked by magnitude of the percentage loss. In addition to the percentage loss, the following information is displayed for each drawdown:

- **Length** - The number of months from equity high to the lowest point before the next equity high.
- **Recovery** - The number of months from the investment took to recover, measured from thelowest point to the next equity high.

Drawdown	Length	Recovery	Peak	Valley
(44.73%)	25	0	Aug-2000	Sep-2002
(29.58%)	3	18	Aug-1987	Nov-1987
(16.52%)	20	3	Nov-1980	Jul-1982
(15.37%)	2	3	Jun-1998	Aug-1998
(14.69%)	5	4	May-1990	Oct-1990
(14.26%)	14	5	Dec-1976	Feb-1978
(10.95%)	3	4	Jun-1975	Sep-1975
(9.73%)	2	3	Jan-1980	Mar-1980
(9.01%)	2	5	Aug-1978	Oct-1978
(8.27%)	1	4	Aug-1986	Sep-1986

Drawdown | Consec Gain | Consec Loss

- **Peak** - The date of the first negative month (drawdown) after an equity high.
- **Valley** - The date of the lowest point of the drawdown as measured by the VAMI index. If the drawdown is only one month long, the start and end dates will be identical.

The **Consec Gain** and **Consec Loss** tabs show all periods of consecutive gains or losses, ranked by the magnitude of the percent change. In addition to the change in percentage, the tables also display the length, start date, and end date of each period.

Monthly Performance Table

The **Monthly Performance Table** is located at the top right of the Statistics Window. The **Start Date** and **End Date** for the investment are shown at the top left of the table and the total number of months in the data record is shown at top right. Below this is a three-column table showing the percent return for each month, the VAMI index, and the cumulative return since inception. The arrows to the right of the table can be used to scroll through the monthly returns. Estimated figures are displayed in blue.

Risk Table

The **Risk Table** is located on the right side of the window below the Monthly Performance Table. It displays monthly, quarterly and annual statistics for a variety of return and risk measures (see the Appendix for statistical formulas). The following statistics are included:

- **Compound Return** - This is the compound geometric mean. The geometric mean is the monthly average that assumes we have an equivalent rate of return for each month to arrive at the same compound growth rate as we do using the actual month-to-month return data. The quarterly and annual compound returns are calculated using the monthly compound return solution.
- **Standard Deviation** - This is the least squares Standard Deviation calculation.
- **Gain Deviation** - A variation on the standard deviation calculation that considers only positive return periods in calculating the mean (gain mean) and in computing the variation from this mean.
- **Loss Deviation** - A variation on the standard deviation calculation that considers only negative return periods in calculating the mean (loss mean) and in computing the variation from this mean.
- **Down Deviation** (Downside Deviation) - Measures the deviation of only those data points that fall below a minimum acceptable return (MAR) from the minimum acceptable return. The statistic is calculated

3 ways based on the different assumptions for MAR that are shown in parentheses. The first MAR assumption can be changed by selecting **Default Minimum Acceptable and Risk Free Returns** from the **Preferences** menu. The second MAR assumption uses the Sharpe risk free rate, which can be changed at the same time as the minimum acceptable return. The third MAR assumption is zero, which shows the deviation of all losing rolling periods below zero.

- **Sharpe Ratio** - The arithmetic average return less the risk-free return divided by the standard deviation.
- **Sortino Ratio** - The average period return less the Minimum Acceptable Return (MAR) divided by the downside deviation from the Minimum Acceptable Return (MAR). Just as with the Down Deviation calculation, the Sortino Ratio is calculated on the three assumptions for the Minimum Acceptable Return (MAR) listed above.
- **Skewness** - The degree of asymmetry of a distribution around its mean.
- **Kurtosis** - The relative peakedness or flatness of a distribution compared with the normal distribution.

Below the Risk Table are three additional return risk measures:

- **Sterling Ratio -** The average annual return for the latest 36 months divided by the average of the maximum drawdown during each of the latest three 12-month periods plus 10%. If 36 months of data are not available, this statistic is not shown.
- **Calmar Ratio -** The average annual return for the latest 36 months divided by the maximum drawdown during the latest 36 months. If 36 months of data are not available, this statistic is calculated using the data available.
- **Losing Streak -** The percent change between the maximum equity high (high water mark) and the latest month's equity. If the latest month's equity is a high water mark then 0% is displayed.

Correlation Analysis Table

The **Correlation Table** is located at the bottom right of the **Investment Statistics Window** and provides a measure of the relationship between the current investment and one or more benchmark investments.

Benchmark Analysis	Alpha	Annualized A	Beta	R	R^2
Barra S&P 500	0.00%	0.00%	1.000	1.000	1.000
CSFB-Tremont Hedge Fund Index	(0.16%)	(1.96%)	0.933	0.412	0.170
HFRI Fund of Funds Composite Index	(0.22%)	(2.58%)	1.305	0.488	0.238
Lehman Aggregate Bond Index	1.03%	13.11%	(1.035)	(0.228)	0.052
ML 3-month T-Bills	0.60%	7.45%	(0.441)	(0.015)	0.000
MSCI EAFE - Net	0.02%	0.26%	0.876	0.839	0.704
Nasdaq Composite Index	0.15%	1.82%	0.419	0.814	0.663
Russell 1000 Growth Index (DRI)	0.25%	3.06%	0.732	0.937	0.878
Russell 1000 Value Index (DRI)	(0.13%)	(1.54%)	0.942	0.881	0.777

M | Q | M-Ratios | Q-Ratios | M-Up | M-Dov

Correlation statistics are divided among 8 tabs - **M**, **Q**, **M-Ratios**, **Q-Ratios M-Up**, **M-Down**, **Q-Up**, and **Q-Down**.

The **M**, **Q**, **M-Up**, **M-Down**, **Q-Up**, and **Q-Down** tabs display the following correlation statistics:

- **Alpha** - The Y intercept of the regression line.
- **Annualized A** - Calculated by annualizing the Alpha for the period.
- **Beta** - The slope of the regression line.
- **R** - The correlation coefficient (Pearson Product Moment Correlation).
- **R^2** - The coefficient of determination.
- **T-Error** - Tracking Error is measured by taking the square root of the average of the squared deviations between the investment's returns and the benchmark's returns.
- **Treynor** - Treynor Ratio is similar to the Sharpe Ratio, except it the risk measure in the denominator is Beta, versus standard deviation for the Sharpe Ratio.
- **Jensen A** - Jensen Alpha quantifies the extent to which an investment has added value relative to a benchmark. The Jensen Alpha is equal to the investment's average return in excess of the risk free rate minus the Beta times the benchmark's average return in excess of the risk free rate.
- **Active Premium** - A measure of the investment's annualized return minus the benchmark's annualized return.
- **Information Ratio** - The Information Ratio is the Active Premium divided by the Tracking Error. This measure explicitly relates the degree by which an investment has beaten the benchmark to the consistency by which the investment has beaten the benchmark.

- **Start** - The earliest month taken into consideration for the benchmark. In order for correlation statistics to be accurate, the benchmark data must coincide with that of the current investment. Therefore, the **Start Date** for the current investment must not fall before that of any of the benchmarks. If this is the case, the data for the benchmarks will appear in blue, indicating that there is insufficient data to perform a proper correlation analysis. To display more accurate correlation statistics, you may change the **Start Date** of the current investment so that it does not predate the benchmark data.
- **End** - The latest month taken into consideration for the benchmark investment. Accurate correlation statistics require that the **End Date** for the current investment must be after that of any of the benchmarks. If this is the case, the data will be displayed in blue, as above. To display more accurate correlation statistics, you may change the **Start Date** of the current investment so that it does not outdate the benchmark data.
- **Sharpe Ratio** - The arithmetic average return less the risk-free return divided by the standard deviation.

NOTE – The key for correlation analysis is that the current investment and the benchmarks must share common date ranges in order to make a valid comparison. If the benchmarks contain more data than the current investment, PerTrac will automatically decrease the date range the benchmark. However, if the benchmark contains less data than the current investment, you must narrow the date range for the current investment by changing the **Start Date** and **End Date**.

The **M-Ratios** and **Q-Ratios** tabs contain the following correlation statistics for monthly and quarterly periods, respectively:

- **Up Capture** - The Up Capture Ratio is a measure of the investment's compound return when the benchmark was up divided by the benchmark's compound return when the benchmark was up.
- **Down Capture** - The Down Capture Ratio is a measure of the investment's compound return when the benchmark was down divided by the benchmark's compound return when the benchmark was down.
- **Up #** - The Up Number Ratio is a measure of the number of periods that the investment was up when the benchmark was up, divided by the number of periods that the benchmark was up. The larger the ratio, the better.
- **Down #** - The Down Number Ratio is a measure of the number of periods that the investment was down when the benchmark was down,

divided by the number of periods that the benchmark was down. The smaller the ratio, the better.

- **Up %** - The Up Percentage Ratio is a measure of the number of periods that the investment outperformed the benchmark when the benchmark was up, divided by the number of periods that the benchmark was up. The larger the ratio, the better.
- **Down %** - The Down Percentage Ratio is a measure of the number of periods that the investment outperformed the benchmark when the benchmark was down, divided by the number of periods that the benchmark was down. The larger the ratio, the better.
- **% Gain** - The Percent Gain Ratio is a measure of the number of periods that the investment was up divided by the number of periods that the benchmark was up. The larger the ratio, the better.
- **Start** - The earliest month for the benchmark data. Again, for accurate statistics, the benchmark data must coincide with that of the current investment.
- **End** - The latest month for the benchmark data.

2.12 - The Correlation Universe - View the online tutorial!

The Correlation universe (Correl.unv) is a system universe that was installed on your computer when PerTrac was installed. You will populate this universe with benchmarks you want to have access to and use throughout the program. By default, PerTrac will look to this universe for the selection of benchmarks when performing regression for correlation statistics (the benchmark analysis table on the **Investment Statistics Window**), when selecting comparative benchmarks for investment charts, as well as comparative benchmark selection in the various modules of PerTrac. The following steps will walk you through adding benchmarks to your correlation universe.

1. Select **Change Correlation Preferences** from the **Preferences** menu
2. The **Correlation Preferences Window** displays all the investments of the current universe on the left, and all the investments that currently make up the Correlations Universe on the right. Add and remove investments as needed.
3. Click **Save Correlation Universe**.
4. You will see a message saying that the Correlations Universe has been saved. Click **OK**.
5. Exit the **Correlation Preferences Window**.
6. Click the **Recalc** button to update the correlation statistics.

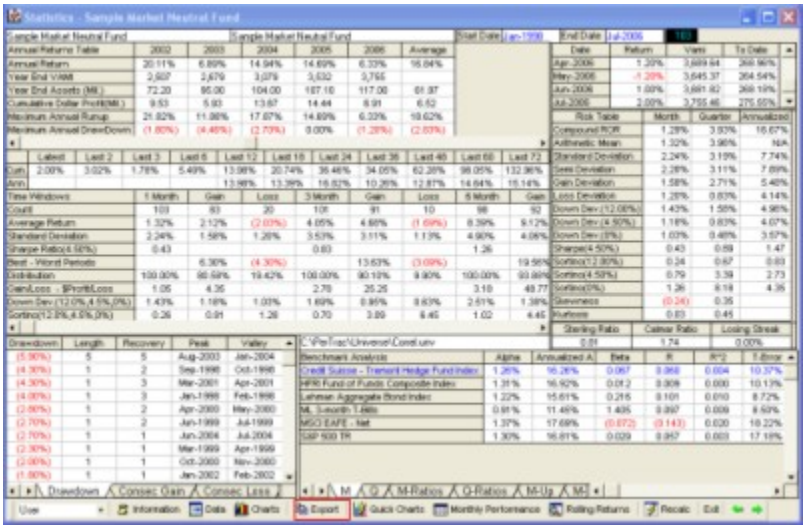
TIP: Do not delete this file. If PerTrac can't find this file, you will receive an error message.

2.13 - Assigning Benchmark Universes - View the online tutorial!

Since different investments are compared to different benchmarks, you may want to assign a separate benchmark universe to different investments. The **Correlation Universe** is the default universe assigned to all investments. However, you can create custom benchmark universes containing only those benchmarks that apply to a certain asset class or investment strategy. Please see the section on creating universes for instructions on creating the benchmark universes. Once universes are created, follow these steps to assign a particular benchmark universe to a specific investment.

1. Select the investment to which you wish to assign a benchmark universe, or, if you wish to assign benchmarks to all investments in a given universe, open the desired universe.
2. From the **Tools** menu, select **Assign Benchmark Universe**.
3. When the **Assign Benchmark Universe** window opens, make the selection to assign the benchmark universe to the current investment, or each investment in the current universe.
4. Click **Locate** to select the desired benchmark universe.
5. Click **OK**.

2.14 - Exporting Investment Statistics

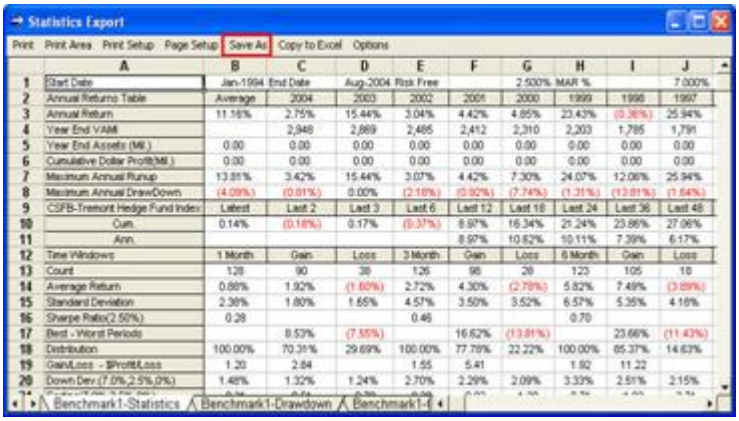


You may find it useful to export PerTrac's investment statistics to another program where you can manipulate the layout of the data, transfer it to a disk, or print it out for a presentation.

1. From the **Information Statistics Window**, click the **Export** button.
2. In the **Statistics Export Window**, there are **Page Setup** and **Print** options which you can use now to change the page setup.

3. To save this data for use in another program, click **Save As**.
4. Select a destination folder, enter a file name and a file type, then click **Save**.
5. Click **OK**.
6. Exit the **Statistics Export Window**.

In addition to the **Save As** feature in the **Statistics Export Window**, a **Copy to Excel** menu provides the option of exporting to either a new Excel workbook or an existing Excel workbook.



Selecting **Autofit Columns** from the **Copy to Excel** menu instructs Excel to find the most suitable width for each column. When activated, a check mark will appear in the menu to the left of Autofit Column.

The **Options** menu contains a **Set Line Length For Memo Fields** function, which allows you to decide the maximum amount of characters per line for each of the memo fields. The length may be as small as 10 characters or as large as 254 characters.

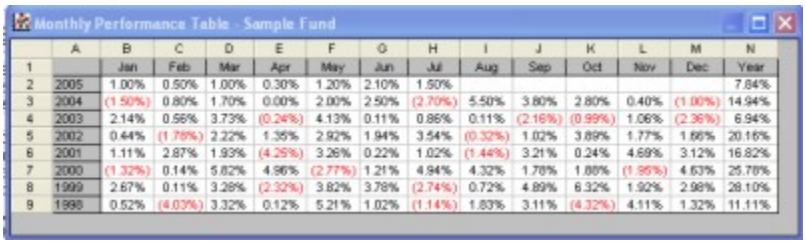
Statistics for the correlation universe can be exported to the same workbook by selecting **Calculate Benchmark Statistics** from the **Options** menu. When exported, each item in your correlation universe will have corresponding Statistics, Drawdown, Correlation, & Performance worksheets, providing you with more data to choose from for your tables and charts. Similarly, selecting **Calculate Benchmark Comparison Sheets** from the **Options** menu allows you to export three additional sheets that provide side by side analysis of the investment and its benchmarks.

Right-clicking over an individual table allows you to copy only that table to the clipboard, so that you may then paste the information into another program.

Displays and Charts

The Investment Statistics Window offers a convenient set of statistical tools that allow you to further analyze the current investment.

Monthly Performance Table


Monthly Performance Table - Sample Fund

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2	2005	1.00%	0.50%	1.00%	0.30%	1.20%	2.10%	1.50%						7.84%
3	2004	(1.50%)	0.80%	1.70%	0.00%	2.00%	2.50%	(2.70%)	5.50%	3.80%	2.80%	0.40%	(1.00%)	14.94%
4	2003	2.14%	0.56%	3.73%	(0.24%)	4.13%	0.11%	0.86%	0.11%	(2.16%)	(0.99%)	1.06%	(2.36%)	6.94%
5	2002	0.44%	(1.78%)	2.22%	1.35%	2.92%	1.94%	3.54%	(0.32%)	1.02%	3.89%	1.77%	1.66%	20.16%
6	2001	1.11%	2.87%	1.93%	(4.25%)	3.26%	0.22%	1.02%	(1.44%)	3.21%	0.24%	4.69%	3.12%	16.82%
7	2000	(1.32%)	0.14%	5.82%	4.96%	(2.77%)	1.21%	4.94%	4.32%	1.78%	1.86%	(1.95%)	4.63%	25.78%
8	1999	2.67%	0.11%	3.28%	(2.32%)	3.82%	3.78%	(2.74%)	0.72%	4.89%	6.32%	1.92%	2.98%	28.10%
9	1998	0.52%	(4.03%)	3.32%	0.12%	5.21%	1.02%	(1.14%)	1.83%	3.11%	(4.32%)	4.11%	1.32%	11.11%

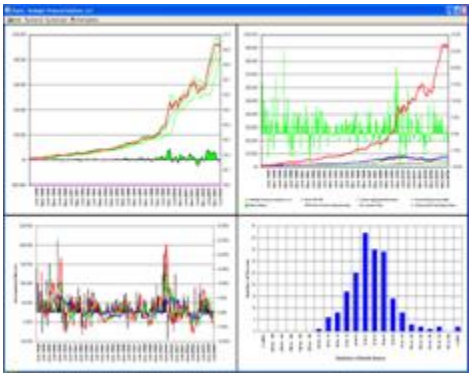
Clicking the **Monthly Performance** button opens the **Monthly Performance Table**, which displays the complete monthly performance history for the current investment. For each year, a row of data supplies the performance (in percentage format) from January to December, followed by the value for the entire year. This table can be copied to the clipboard by right-clicking over the table, then clicking **Yes**. This will allow you to paste the table in another program.

Rolling Returns Summary

Clicking the **Rolling Returns** button opens the **Rolling Returns Summary**, which displays the rolling performance history for various time periods ranging from one month to ten years. This table can also be copied to the clipboard using the same steps as above.

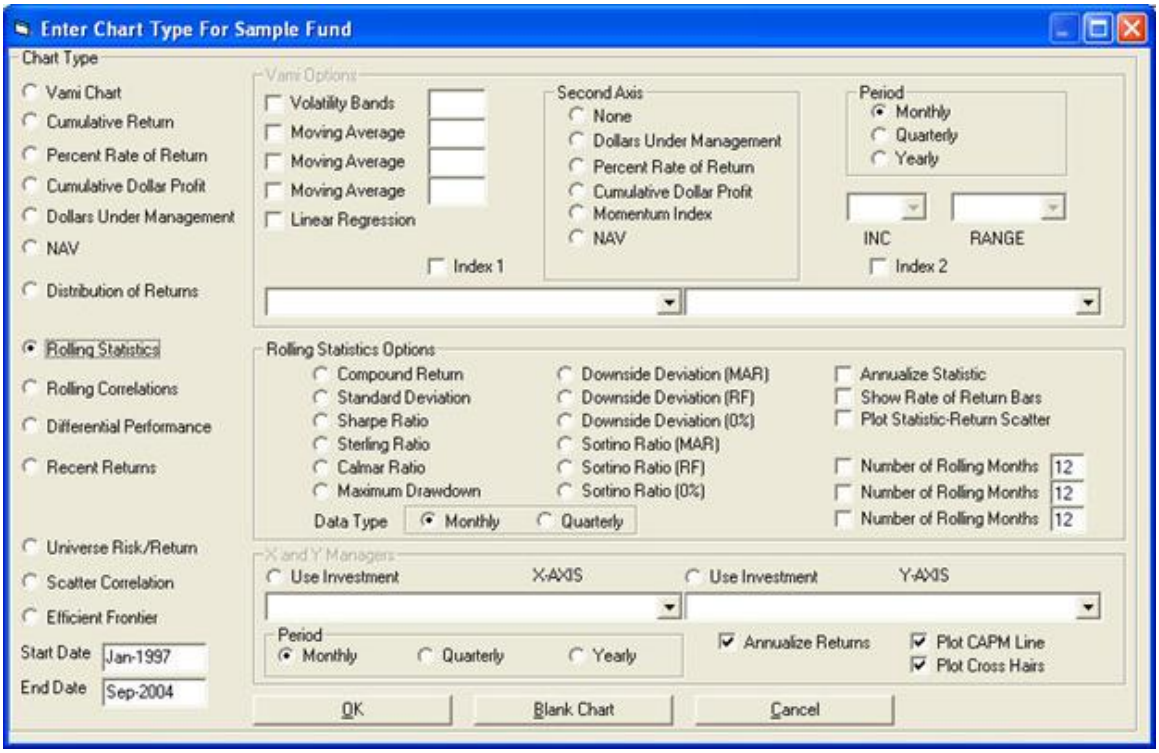
Quick Charts

Clicking the **Quick Charts** button creates four convenient charts pertaining to the current investment. Each chart (**VAMI Chart**, **Benchmark Chart**, **Rolling Statistics Chart**, and **Distribution of Returns Chart**) provides a quick visual representation of the data and also contains a multitude of layout and print options. Clicking the **Chart Options** button will provide you with several customization features. Of course, this is just a hint of what you will be able to accomplish through the **Investment Charts Window**, explained in section 2.15 below.



2.15 - Investment Charts - View the online tutorial!

PerTrac gives you the ability to quickly create, edit, and save a wide variety of charts created in the **Investment Charts Window** by clicking the **Investment Charts** command button from the **Current Universe Window** or by clicking the button labeled **Charts** from the **Tool Bar**.



Along the left side of the **Investment Charts Window** is a selection of 13 different chart types, as well as **Start Date** and **End Date** boxes with which to define the time period for your chart. The rest of the window consists of 3 options areas that allow you to further define your chart.

Creating an Investment Chart

The following is a simplified list of the steps required to create a chart. Different chart types require different options to be entered. For more specific assistance, please call technical support or schedule additional training.

1. From the **Investment Charts Window**, select a chart type that will best present the information you would like to see. The options available for creating you chart will depend on your selection of the chart type.
2. Enter a **Start Date** and **End Date** in the lower left corner of the window. The initial settings for these fields reflect the entire time

period for which data is available. If you are creating a correlation chart, you may need to narrow this date range to match the benchmark dates.

3. Modify the relevant chart options to suit your needs.
4. Click OK to display the chart.
5. Customize the chart using the **Chart Designer**, **Edit Chart Data**, or **Wizard** options from the pop-up menu.
6. You can also print or save the chart, if necessary, from the pop-up menu.

Once a chart has been saved, you may open it from the **Master Window** by selecting **Load Chart** from the **File** menu.

Chart Options

Geometric Statistic Charts

The following options are associated with the chart types in the upper left corner of the window (**VAMI, Cumulative Return, Percent Rate of Return, Cumulative Dollar Profit, Dollars Under Management**, and **NAV**):

- **Volatility Bands** - Volatility bands are plotted two standard deviations above and below the moving average. The moving average itself is plotted for the time period specified in the box to the right of the selection. For instance, selecting **Volatility Bands** and entering “10” in the box would plot a 10-period moving average and 2 standard deviation volatility bands above and below the 10-period moving average.
- **Moving Averages** - Specify up to three additional moving averages. Again, the length is set in the box to the right of the selection and is expressed in number of periods.
- **Linear Regression** - Check this box to display a linear regression line on the chart.
- **Second Axis** - A second axis can be charted by selecting one of the buttons from the listed options.
- **Momentum Index** (In Second Axis choices) - This index is a measure of directional momentum.
- **Period** - Period may be monthly, quarterly, or yearly.
- **Index 1, Index 2** - Check one or both of these boxes to display the performance of additional comparative investments on the chart. Use the drop down list box to select the comparative benchmark. The

benchmarks listed will be those currently in the **Correlation Universe** (Correl.unv).

Distribution of Returns

This bar chart displays the distribution of returns for the current investment in fixed increments. You can specify both the increment and range (above and below 0%) of the rate of return.

Rolling Statistics

- **Annualize Statistics** - Annualizes the data for the current chart.
- **Show Rate of Return Bars** - Incorporates the monthly rate of return bars in the chart.
- **Plot Statistic-Return Scatter** – Places return on the Y-axis and the selected statistic on the X-axis and connects the points in sequential order.
- **Number of Rolling Months** - Allows you to choose the rolling period length. You can select to plot up to three different rolling periods.
- **Data Type** - Allows you to choose a period length, either monthly or quarterly, for the rolling average return calculation.

Rolling Correlations

- **Rolling Correlations Options –** The rolling correlations options include: Alpha, Beta, Correlation(R), R-Squared, Information Ratio, Tracking Error, and Beta T-Stat.
- **Plot Investment** - Plots the cumulative return for the current investment.
- **Plot Benchmark** - Plots the cumulative return for the benchmark.

Differential Performance

- **Plot Cumulative Differential Return** - Plots the cumulative differential return.

Recent Returns

- **Plot Historical Average** - Check this box to chart the average rate of return for the period.
- **Plot Standard Deviation** - Check this box to chart the standard deviation for the period.
- **Show Benchmark** - Check this box to chart the standard deviation for the period.
- **Display Options** - Toggles between **Annualize Returns** and **Normalize Returns**.
- **Periods To Display** - Allows you to select or de-select particular periods.

Universe Risk/Return Options

- **Use Risk Free Rate** – When plotting the CAPM (Capital Asset Pricing Model) line, select this option if you want to use the risk free rate of return that was set in the **Default Minimum and Risk Free Returns** window located on the **Preferences** tab.
- **Risk Free Asset** – When plotting the CAPM (Capital Asset Pricing Model) do not check **Use Risk Free Rate** as above, but click the drop-down menu to select a Risk Free benchmark rather than the risk free rate.
- **Risk Asset** - When plotting the CAPM (Capital Asset Pricing Model) click the down arrow to select the risk asset for the CAPM line.
- **Period** – Select the period: Monthly, Quarterly, or Yearly; check the box to **Annualize Returns** if you want annualized risk and return

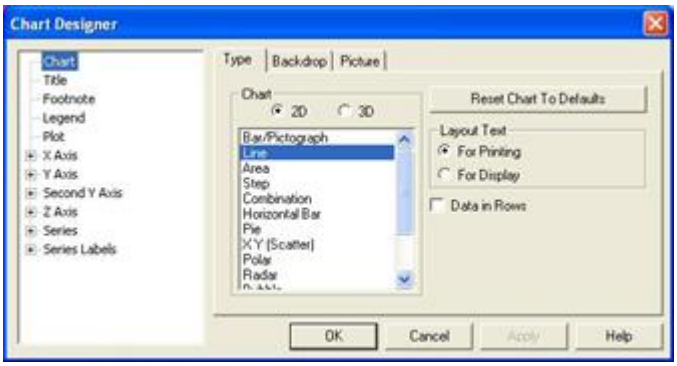
numbers; elect to **Plot CAPM Line**; elect to **Plot Cross Hairs** which will plot the cross hairs through the selected benchmark.

Scatter Correlation & Efficient Frontier

Two investments or indices must be specified for these comparative charts.

- **X-Axis Investment** - Investment or benchmark to be used as the X-Axis for Scatter Correlation & Efficient Frontier
- **Y-Axis Investment** - Investment or benchmark to be used as the Y-Axis for Scatter Correlation & Efficient Frontier
- **Period** - Period may be monthly, quarterly, or yearly.

Editing a Chart



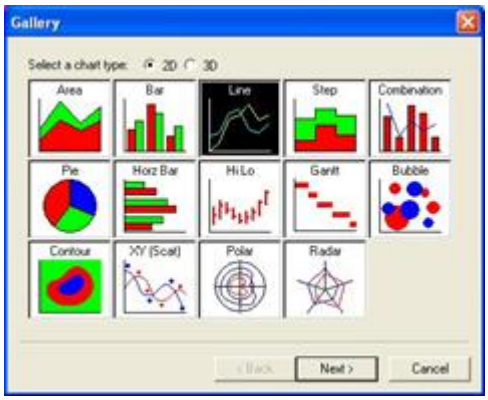
Each chart in PerTrac consists of several objects; including legends, axis titles, axis labels, and series points all of which can be reformatted to create a specific style. While editing a chart, the pop-up menu provides you with **Chart Designer**, **Edit Chart Data**, and **Wizard** options. The Chart Designer window works similar to Excel chart formatting windows.

Editing Chart Data

The **Edit Chart Data** option allows you to change the headings, dimensions, size, and contents of the table that contains the data for your chart.

Chart Wizard

Selecting **Wizard** begins a four-step process that allows you to change the general appearance of the chart, such as from a pie chart to a bar chart.



Clicking the **Blank Chart** button from the **Investment Charts Window** creates a blank chart that you can use to create a chart from scratch by using the methods explained above.

Exporting Charts and Data

By using the **Copy** option from the pop-up menu, you can paste both the data and the chart to another program.

1. Right-click over the chart and select **Copy**.
2. To paste the data, right-click over a cell in Excel and select **Paste**.
3. To paste the chart, right-click in Excel and select **Paste Special**, select **Picture**, and then click **OK**.

Creating Chart Templates

All charts in PerTrac have a basic format when generated. If you want to change your chart formats (i.e. fonts, colors, titles) you can format the chart and save it as a template. Using your template will eliminate the need for you to re-format the chart each time you create it. For example, you could make your formatting changes and save the chart as a template by right-clicking on the chart and selecting **Save**. By saving the chart you are actually saving the formats. You would name your chart say, "MyVamiChartTemplate.vtc". If necessary, you can create a different chart template (different formatting) for each type of chart you use. The next time you create the chart our basic chart formats will appear. To access you saved template click the **Copy to Template** button at the top left of the chart window, and select the desired chart template from your personal gallery.

Investment Chart Examples

Percent Rate of Return Chart Example

Suppose you want to create a chart showing an investment's quarterly returns over the past three years.

1. From the **Investment Charts Window**, click the button labeled **Percent Rate of Return** on the left side of the window under Chart Type.
2. If you want a second axis displayed, check the appropriate button from the list of options located in the **Second Axis** frame.
3. Select **Quarterly** from the **Period** buttons.
4. Specify the 3-year time frame for the chart by entering a **Start Date** and an **End Date**, keeping in mind that quarterly date ranges must begin on January, April, July, or October, and end on March, June, September, or December.
5. Click **OK** to display the chart.

Rolling Period Chart Example

Say, for example, that you would like to create a chart showing an investment's average rolling 12-month rate of return line together with monthly return bars.

1. From the **Investment Charts Window**, click the button labeled **Rolling Statistics** on the left side of the window under Chart Type.
2. Select **Compound Return** under Rolling Statistics Options.
3. Type 12 into the Number of Rolling Months box at right to specify the length of the rolling period calculation.
4. Check the Box labeled **Show Rate of Return Bars** and select **Monthly** under Data Type.
5. Type in the desired time frame using the **Start Date** and **End Date** boxes at lower left, or leave them alone to include the investment's entire data history.
6. Click **OK** to display the chart.

Scatter Correlation

Suppose you want to chart the monthly correlation of an investment to a benchmark (e.g. S&P 500, Russell 2000, CSFB Hedge Fund Index)

1. From the **Investment Charts Window**, click the button labeled **Scatter Correlation** on the left side of the window under Chart Type.
2. Select **S&P500 Stock Index** from investments listed in the drop down list for the X-Axis (the index must be included in the correlation preference universe, correl.unv, to show up in the list. For more information, see **Changing Correlation Preferences**.
3. Click the **Investment** button to select the active investment for the Y-Axis
4. Select **Monthly** from the **Period** buttons.
5. Enter the **Start Date** and **End Date**, keeping in mind that the benchmark investment must have at least the same months' data as the current investment.

   Click **OK** to display the chart.

The SQL version of PerTrac gives the users a higher level of investment information customization. The following features are unique to the SQL version of PerTrac. These features are designed primarily for increased efficiency for User Information data.

2.16 - Adding Daily/Weekly Data

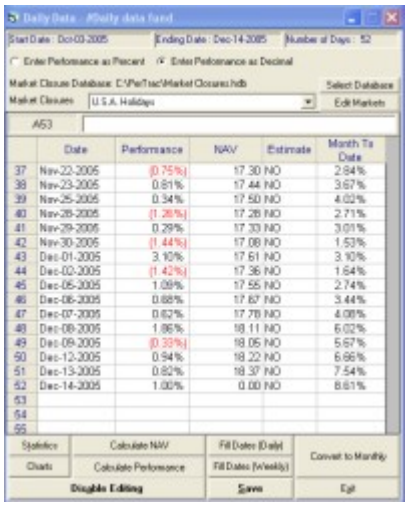
You can open the Daily/Weekly **Investment Data Window** by clicking the Investment Data - Daily/Weekly command button from the left-hand side of the **Current Universe Window** or by clicking the button labeled Daily/Weekly Data from the **Tool Bar**. The Daily/Weekly data sheet is similar to the traditional Monthly/Quarterly data sheet in that the same data sheet is used for either data series. The following steps will walk you through adding a new investment with daily or weekly data.

Note: If you are adding daily or weekly data to an existing fund, skip step #1 below and start with #2.

1. Click **Add New investment** , the first button on the left hand side of the Home window. When the **Add New Investment** window opens, enter a name for your fund and click **Enter**.

2. Highlight your fund, then click Investment Data - Daily/Weekly on the left-hand side of the Current Universe Window or by clicking the button labeled Daily/Weekly Data from the Tool Bar.

3. The Daily/Weekly data window appears:



Note: This sheet contains five columns of data: Date, Performance, NAV, Estimate and Month To Date.

- **Date:** Contains daily or weekly dates. Weekly dates **must** have a Friday ending date. The Fill Dates (Daily) and Fill Dates (Weekly) options will populate this column for you.

- **Performance:** Contains daily or weekly performance. PerTrac statistics are calculated from this column of data. You can use the performance data to calculate the NAV column. Once the performance has been entered, highlight the NAV column and click **Calculate NAV** from the command bar.
- **NAV:** Contains net asset values. PerTrac statistics are not calculated from this column of data. However, if you receive your daily or weekly data in NAV format, you can enter those values and then use the **Calculate Performance** option to calculate the daily or weekly performance based on the change in NAV. Once the NAV has been entered, highlight the Performance column and click **Calculate Performance** from the command bar.
- **Estimate:** Use this column indicate whether or not you returns are estimates. Enter either Yes or No.
- **Month To Date:** The **Month To Date** column is linked to the **Performance** column. If you enter data directly to the performance column, or calculate the performance from the NAV column, the Month To Date column will update automatically. Conversely, if you enter a month to date value, the performance will column will update based on the change in the month to date column.
- **Note:** If you convert your daily data to monthly with the **Convert To Monthly** option from the command bar, and you don't have a full month of data, the return in the Month To Date column will be entered on the monthly data sheet.

4. Click **Enable Editing** at the bottom of the **Daily/Weekly Data** window. Enabling editing allows additional functionality to become active. Some of the buttons at the bottom of the window will change from grayed out text (inactive) to black text (active).
5. Click the down arrow on the window next to the heading **"Market Closures"**. Select **U.S.A. Holidays.**

Note: When entering daily data there will be numerous days throughout history when the US markets were closed. (i.e. holidays, weather, world or economic events, etc.) The daily data sheet has to account for these day. You can not skip days when entering data. To account for those market closures, we have included a "Market Closures" schedule that will allow you to skip those dates when entering your data. The "Market Closures" schedule accounts for all US market closures back to January, 1965. **This schedule can be edited if you actually traded on any of these closed days, or if you did not trade on dates not listed. To edit the schedule click the "Edit Markets" to the right of the window, and select "U.S.A. Holidays" from the drop-down menu. You can now insert dates you did not trade, or delete a closed date.**

6. Your daily or weekly data can be copied from Excel or entered manually. If your data is copied from Excel the dates have to be formatted with a valid Excel format. If you enter the dates manually, type the date of your first return in cell 1. Highlight any number of rows below row 1 and click **Fill Dates (Daily)** if you are entering daily data. Select **Fill Dates (Weekly)** if you are entering weekly data.

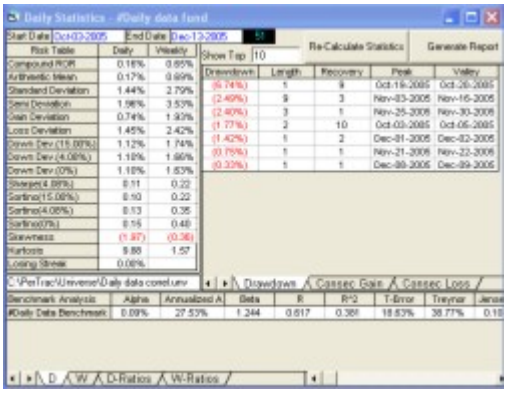
NOTE: Weekly data must have a Friday end date. If you copy weekly data from Excel, or enter your data manually, and enter a date other than a Friday ending date, an error message will appear indicating your date is not a Friday date. The Fill Dates (Weekly) option will automatically enter Friday ending dates.

TIP: If you copy and paste the performance data from Excel, the return format has to be taken into account. If your returns are in percent format in Excel check the option **"Enter Performance as a Decimal"** on the top of the data entry sheet. If your returns are in number format in Excel check the option **"Enter Performance as Percent"**. These options also apply when entering data manually. If **"Enter Performance as a Decimal"** is checked you enter returns in decimal format. (i.e. 2.0% as .02) If the **"Enter Performance as Percent"** is checked enter your returns in number format. (i.e. 2.0% as 2.0)

The command buttons:

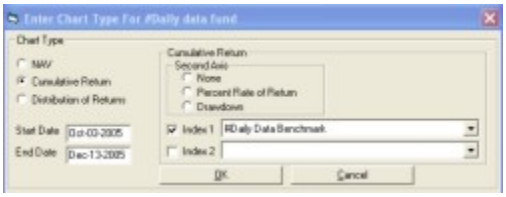
1. Enable/Disable Editing: Enable edit must be selected prior to adding or editing data on this sheet. When data has been entered or edited click Disable Editing to exit and save your data.

2. Statistics:



The daily statistics window is similar to the Investment Statistics window for monthly data, which will show the date range of your analysis, number of days, Risk Table, Drawdown, Consecutive Gain, and Consecutive Loss tables, daily and weekly correlation statistics, daily and weekly capture ratios.

3. Charts:



The daily and weekly chart window options: NAV, Cumulative Return, Distribution of Returns. A second Y-Axis can also be generated on: Percent Rate of Return and Drawdown. One or Two benchmarks can be included on the NAV and Cumulative Return charts.

4. Calculate NAV: If your daily or weekly data was entered in the Performance column, use this option to create a NAV stream based on the performance.

5. Calculate Performance: If your daily or weekly data was entered in the NAV column, use this option to calculate the daily or weekly performance in percent format. **Note:** if you copy or manually enter NAV data, you **must** use the Calculate Performance option. PerTrac calculates all statistics from the performance column.

6. Fill Dates (Daily): This option will fill the Date column with daily dates.

7. Fill Dates (Weekly): This option will fill the Date column with weekly dates. Note: the dates entered will always end on a Friday.

8. Convert to Monthly: This option only applies to daily data. If you would like to use all of PerTrac's functionality to analyze your data, you have the option of converting your daily data streams to monthly data streams. This option will populate the monthly data sheet. If selected, your fund will not have two data sheets, one with daily data the other with monthly. **Note: If your fund has an existing monthly data sheet, and you select this option on the daily data sheet, a message will appear asking you if you want to replace your existing monthly data.**

9. Save: When all data has been entered or edited, click Save.

10. Exit: When your data has been saved, exit the data sheet.

Daily/Weekly Data Reports

The daily/weekly data module contains an export reporting function similar to PerTrac publisher report generation. PerTrac exports the statistics tables and charts to an Excel workbook. You can then create custom reports from scratch or use one of the templates installed on your computer. The following steps will walk you through generating daily/weekly data reports.

1. Open the Daily/Weekly Investment Data Window by clicking the

command button from the left-hand side of the Current Universe Window or by clicking the button labeled

from the Tool Bar.

2. Click **Statistics** on the command bar. This will open the daily/weekly data investment statistics page.

3. The daily/weekly data statistics page contains a **Generate Report** button on the upper right corner. Click **Generate Report** to open the **Daily Report** window.

4. Click **Locate** to open the file selection window. The Custom Reports folder will open by default, which contains the Master template "MasterDailyReport.xls" file for creating your report from scratch, and a pre-built daily data report template "Daily Report.xls".

5. Select "Daily Report 1.xls" and click **Export.** Your report is now open as and Excel workbook.

Note: The "MasterDailyReport" and "DailyReport" files can also be used for weekly data streams.

Single Investment Analysis SQL Version

2.01(a) - Make Database Relational

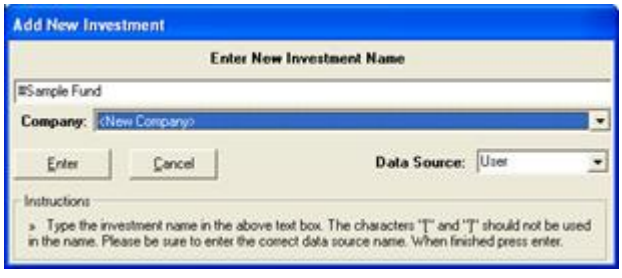
Make Database Relational - Located on the **Tools** tab, this option will scan the SQL database for Investment Manager (Company)/Investment (Fund) relationships. This feature also enables the sharing of investment information created with the **Add New Investment** button, the new **Set Company Fields** and **Create Dropdown List** features. **Make Database Relational** will also create a list of Manager (Company)/Investment (Fund) relationships that can be viewed by clicking the new **Show Managers** button on the left hand side of the Home Window.

TIP: Make Database Relational must be run prior to using the **Set Company Fields, Create Drop-down List** and **Show Managers** features.

NOTE: The **Related Funds** feature available in both Access and SQL versions of PerTrac, differs from the **Make Database Relational** feature available only in the SQL version of PerTrac. The **Related Funds** feature will find all funds that have the identical first-field (the first upper left field) values on the General Investment Information page. Depending on the data vendor, that field could be manager name, fund name, company name etc. **Related Funds** will list all investments with the identical value in that field. **Make Database Relational** takes the relationships one step further by using a number of other fields on the General Investment Information page to further group investments. For example, address information or contact information will be scanned to determine if there is a match.

2.02(a) - Adding New Investments

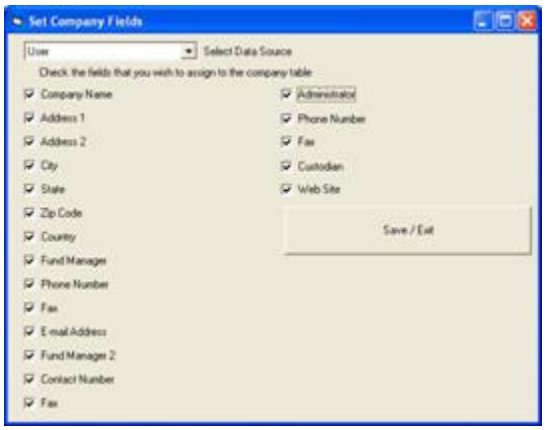
Add New Investment – The **Add New Investment** window now contains the functionality to not only name your investment, but to also assign your new fund to a new or existing **Company.** The **Add New Investment** button is the first button on the left hand side of the PerTrac Home window.


Add New Investment
Enter New Investment Name
Sample Fund
Company:
<New Company>
Enter
Cancel
Data Source:
User
Instructions
» Type the investment name in the above text box. The characters "[" and "]" should not be used in the name. Please be sure to enter the correct data source name. When finished press enter.

TIP: The result of assigning a fund to a new or existing company will be to create a relationship between funds with the same Manager Name, Fund Company, Company Name, Fund Family or other field label shown in the first field on the upper left hand side of the general Investment Information page.

NOTE: There is a 32,766 investment limit that applies to the Microsoft Access database version of PerTrac. The SQL version of PerTrac has no limit on the amount of investments in your SQL database. However, if you exceed 32,766 investments in your SQL database, the check boxes next to each investment name will disappear. The **Create Checked Items Universe** function will not be available.

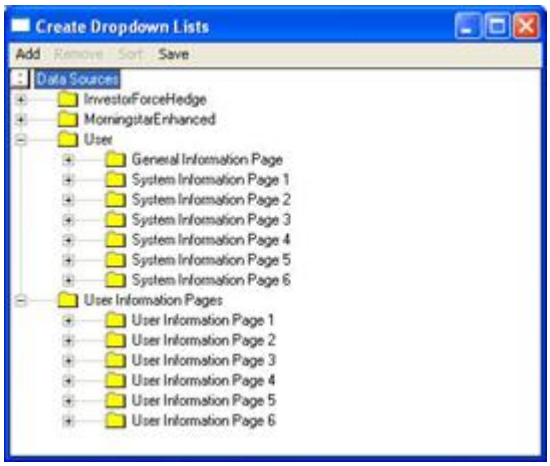
2.03(a) - Set Company Fields



Set Company Fields – Click the **Preferences** tab located on the upper menu bar. Select **Set Company Fields.** This feature lists the first 19 fields on the general **Investment Information** page, starting with the first field on the upper left. **Set Company Fields** can be applied to existing data vendor databases, but more importantly when adding qualitative data to user-entered investments. You may set field names and values that will apply across numerous relational funds which means you no longer have to add this qualitative information one fund at a time. For example, let's say you have a field labeled "Fund Manager" that contains the name of a portfolio manager who manages multiple funds. You only have to add the manager's name to one of the funds. Selecting "Fund Manager" on the **Set Company Fields** option will insure that the portfolio manager's name shows up for all related funds. In fact, all funds with the same value in the first field on the General Information page will then show the portfolio manager's name in the "Fund Manager" field.

TIP – The 19 field labels shown on the **Set Company Fields** window are linked to the data source ".des" description file. To change the labels for your user-entered funds, which will then change the labels in the **Set Company Fields** window, highlight one of your funds in the PerTrac Home window. Click the **Investment Information** button, located on the left side of the Home window. The General Information page will appear. Click, **Enable Edit** at the bottom of this window. You may now change the labels in the first 19 fields starting in the upper left hand corner. When the labels have been changed click **Save,** and then **Disable Edit.**

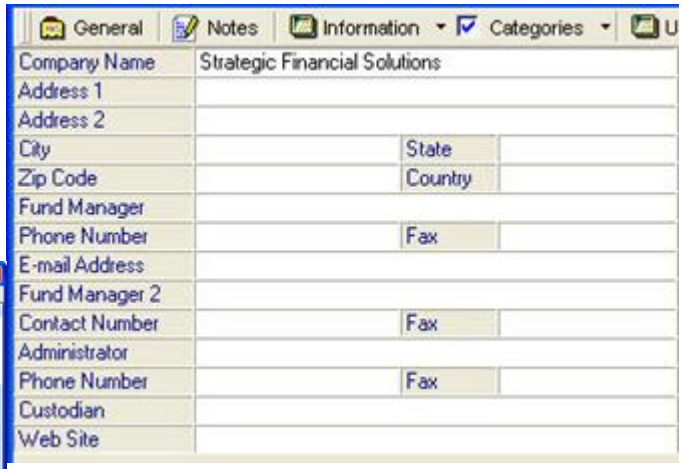
2.04(a) - Create Dropdown Lists

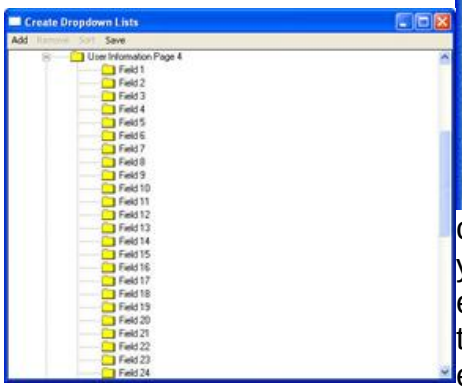


Create Dropdown Lists - This feature allows the user to add custom drop down lists to the System Information & User Information pages on existing data vendor databases. However, the real benefit of this new feature is seen when adding your own user-entered investments. You can add drop down lists to the **System Information** pages as well as the **User Information** pages. You can also import drop down lists. Again, this may be used to expedite the sharing of investment information among multiple investments. The following steps will walk you through adding a dropdown list to your User Information pages.

Step 1: Click the **Preferences** tab on the upper menu bar. Select **Create Dropdown List.**

Step 2: Click on the **Data Source** label. Now click **Add,** located on the menu bar to select the **Data Source** for which you wish to create a dropdown list. Once you've



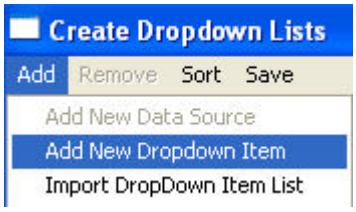


clicked **Add,** a window will appear prompting you to choose a data vendor file with the extension **".des"** For user-entered funds click the "**User.des"** file. Remember that you can't edit the **System Information Pages** if the data source is set to anything other than **User**. If you select Hedgefund.net, Morningstar, or any other data vendor for instance, you will only be able to add dropdown lists to the **User Information Pages**. If you add dropdown lists to the **System Information Pages**, the data will be overwritten the next time you update the data vendor database.

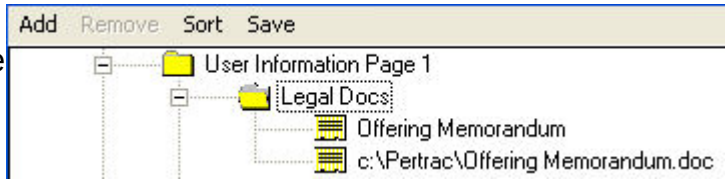
Step 3: Click the plus sign next to the **System or User Information Page** to which you are adding the dropdown list to. There are 50 available fields on each **System and User Information Page** which are labeled **Field 1 – Field 50**.

NOTE – By defaut, the labels shown are Field 1- Field 50. However, if you enter labels on the information pages those new labels will be shown the dropdown list.

Step 4: Add your new dropdown item. Click on the **Field 1** label. Then click the **Add** button on the menu bar and select
Add New Dropdown Item.



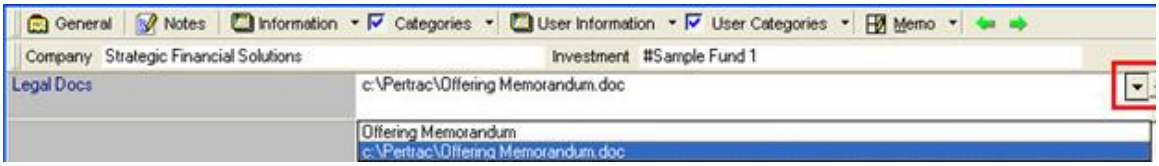
Step 5: Name your dropdown items. As you add and name your dropdown items, they will appear under the field to which you are adding them to. In this example the field name is **Legal Docs**. Remember, however, that this label can be changed at any time by going to that field on the **User Information Page**, clicking **Enable Edit**, then entering a new name for that field. Once you add your labels to the **User Information** page fields they will show up in the **Create Dropdown List** window. Then add dropdown items associated with that field.



TIP – Your dropdown items can take numerous forms. They could be names, places, text or a link to a document file. For example, you could set a link to a Word document,
Excel spreadsheet, or any other file you wish to associate with a number of funds.

Step 6: Click **Save** to save your new dropdown list items.

Step 7: View your new dropdown items. To view your dropdown items, highlight a user data source investment at the **Home** window. Click the **Investment Information** button on the left hand side of the **Home** window. When the Information Window opens click the down arrow next to the **User Information** tab, located on the upper menu bar. Click the **1_User Information Window** tab.

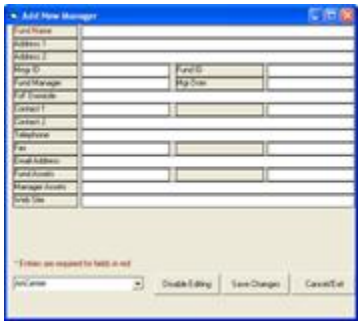


When you click the white area to the right of the label you will now see a small dropdown arrow. Clicking the dropdown arrow will display the items in the dropdown box. Select an item to enter under “Legal Docs”. This item will now appear in the window for this fund and any other fund with a relational link to this fund.

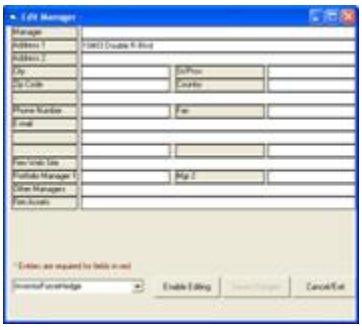
2.05(a) - Show Manager Display

Show Manager Display – Located on the **Home** window, this feature lists all related funds linked by way of the **Make Database Relational** feature, located on the **Tools** tab. Once the database has been made relational, you can view a list of funds related to the same managers, company name, fund family, etc.

When the list appears click the plus sign next to fund manager to display a dropdown a list of related funds. There are three options to work with on the **Manager Display** window.



1. **Add Manager –** The **Add New Manager** window contains the first 19 fields on the general **Investment Information** page. Select the data source in the lower left to which the changes will apply. This will most often be the **User** data source, which will appear for your user-entered funds. When all data has been entered, click the **Save Changes** and then **Disable Editing**.



2. **Edit Manager –** The **Add New Manager** window contains the first 19 fields on the general **Investment Information** page. Click **Enable Edit**. Make your editing changes and click **Save Changes**, **Disable Editing** and **Exit.**

3. **Remove Manager** – This option will completely remove a manager from the database.

Universe (Multi-Fund) Analysis

3.01 - Creating Universes - View the online tutorial!

The term “universe” is PerTrac shorthand to describe a list of investment names. There is no investment data stored in a universe file – instead, the universe files are used by PerTrac to rapidly retrieve information on a list of investments from a database upon command. PerTrac allows you to group investments from the entire database, or Master Universe (“All.unv”), into any number of customized subset universes that contain only the investments you select manually, through statistics searches, or through information searches.

Creating a Checked Items Universe

This feature in PerTrac provides you with a convenient, manual way to start a universe. Each investment in the **Current Universe Window** has a check box that can be used to select, or de-select, an investment.

1. Check the investments that you wish to include in your universe.
2. Click the **Create Checked Items Universe** button. This opens the **Create New Universe Window**. This window contains two list-boxes, placing all of the investments from which to select your universe in the **Current Universe List Box** on the left, and all the investments that you have selected in the **New Universe List Box** on the right.
3. You may continue to add and remove items until you have the universe of investments you want.
4. Click **Save New Universe**.
5. When the **Save As** window opens, enter a name for your universe.
6. Click **Save**.

Manually creating a new universe without check boxes

Another way to manually create a new universe is to click the **Create New Universe** button from the **Current Universe Window**. This time, when the **Create New Universe Window** appears, the **Current Universe List Box** on the left will contain the investments from which you can select, but the New Universe List Box will be empty.

1. Select an investment from the **Current Universe List Box** and click the **Add** button to move that investment to the **New Universe List Box**. The **Add All** button can be used to add all of the investments in the **Current Universe Window** to the **New Universe List Box**. Double-clicking an investment in the **Current Universe List Box** will also add that investment to the **New Universe List Box**. Add

investments until you have the universe of investments that you want. Once investments have been added, the **Remove** and **Remove All** commands can be used to reduce the number of investments in the **New Universe List Box**. The **Add, Add All, Remove** and **Remove All** commands are also available from the right-click menu.

2. Click **Save New Universe**.
3. When the **Save As** window opens, enter a name for your universe.
4. Click **Save**.

NOTE – While in the **Create New Universe** window, multiple consecutive items may be selected by dragging your mouse over them. Non-consecutive items may be selected by clicking the mouse while holding down the **CRTL** key.

TIP – A right click with the mouse button in the Home screen will give you a shortcut to creating or opening a universe.

Creating a new universe by modifying an existing universe

Another way to create universes is by loading an existing universe into the **New Universe List Box**, then adding and removing investments as desired.

1. From the **Create New Universe Window**, click **Add to a Universe**.
2. When the **Open** dialogue box appears, select an existing universe file, then click **Open**. This places all investments from that universe into the **New Universe List Box**.
3. Add and remove items until you have the universe of investments that you want.
4. Click the **Save New Universe** button.
5. When the **Save As** window opens, enter a name for your universe.
6. Click **Save**.

TIP: Always save the universes after creation, even if only in a temporary file such as "**Temp.unv**".

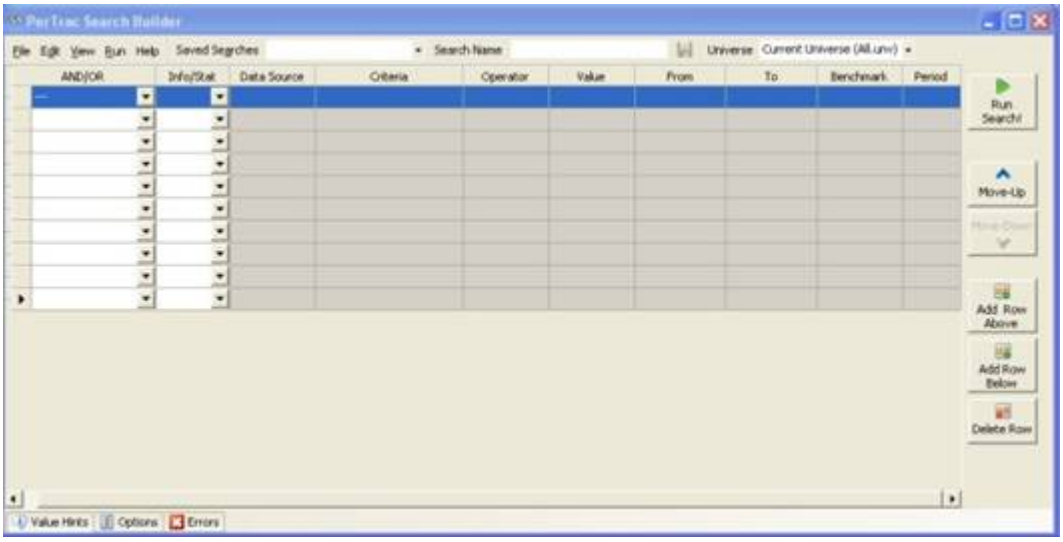
I. Search Builder

Search Builder is a powerful new search engine that combines the current Information and Statistics search engines into a single search engine with the following features:

1. The ability to select qualitative and quantitative criteria in the same search.
2. The ability to search across multiple data sources in a database when selecting Information search criteria.

3. The option to automatically remove duplicate records from the resulting universe of investments when a search is completed.
4. The option to save your set of search criteria as a search file that can be used again later.

The new Search Builder search engine can be accessed three different ways from within PerTrac: (1) the **Search** button located at the top of the PerTrac window; (2) the **Tools** menu in the menu bar; (3) the more familiar **Create New Universe** button at the left of the Home/Current Universe window. The **Create New Universe** window no longer contains the “Select by Information Search” or “Select by Statistics Search” buttons. They were replaced by the single “Search Builder” button. Either of these options will open the new **PerTrac Search Builder** window.



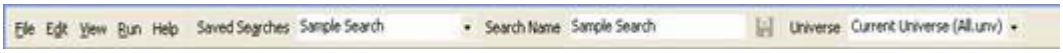
Search Builder Table Options

1. **And/Or:** These options control the logical order in which the search will be run.
2. **Info/Stat:** Select **Info** to choose from Investment Information search criteria, or **Stat** to choose from quantitative criteria.
3. **Data Source:** Allows you to select which data source to use when searching on information fields. (Different data sources contain somewhat different information fields; the information fields listed in the Criteria column will depend on which data source is chosen.) Multiple data sources can be included in a search by selecting different data sources on different rows in the Search Builder.
4. **Criteria:** This is where you will select the actual information or statistic field to be included in the search. (Note: The available statistics are currently the same as those available in the statistics search function of

earlier versions of PerTrac. However, more statistical search criteria will be added in the future.) The available Info or Stats fields can be viewed either in one long alphabetically ordered list or grouped into various PerTrac categories.

5. **Operator:** Equals, does not equal, greater than, greater or equal to, less than, less than or equal to. Applies to both Info and Stat search criteria.
6. **Value:** The requested value entered by the user. Applies to both Info and Stat search criteria.
7. **From:** Enter the start date for the selected criteria. You can search **Start of Data** (Since Inception), or enter a Month/Year.
8. **To:** Enter the end date for the selected criteria. You can search, **End-Date Parameter** (a shortcut when running a saved search each month and you want the statistic run through the new month end date without having to change the end date each month), **End of Data** or enter a Month/Year.
9. **Benchmark:** This option applies when selecting correlation statistic criteria. When a correlation statistic has been selected under the **Criteria** column, the **Benchmark** column will light up for your benchmark selection. (Note: When you click the down arrow to select a benchmark, you will see a list of all your assigned benchmark universes. By default the Correl.unv is assigned to all funds in your database. If you have not assigned additonal benchmark universes to your funds, the Correl.unv will be the only listed universe to choose from).
10. **Period:** The period options are Monthly or Quarterly.

Search Builder Tool Bar Options



1. **File:** Contains options for starting a new search, saving and deleting searches, and resetting your search options.
2. **Edit:** Typical editing features used in spreadsheet applications: cut, copy, paste, insert rows, delete rows, clear contents in a row, move criteria up or down, and grouping functions to group your criteria based on And/Or logic.
3. **View:** Allows the user to view the Criteria lists by category or alphabetically, and to launch the **Value Hints**, **Options** or **Errors** tabs.
4. **Run:** Run a search or check for errors.
5. **Help:** Contains a brief document on how to start a search.
6. **Saved Searches:** This drop-down menu will contain a list of your saved searches. (Note: If you select search criteria, run the search, and then exit without saving, PerTrac will automatically save your search for you. When you click the down arrow saved files will be named “Autosave1”, “Autosave2”, etc.

7. **Search Name:** Use this field to name your search. Once a name has been entered, click the **Save** icon just to the right of the field.
8. **Universe:** This drop-down menu allows you to select the universe on which you will run your search. The list will include All.unv (the universe containing all investments in the current database) as well as any universes saved in the Universe folder.

Search Builder Shortcut Options

These buttons appear at the right side of the Search Builder window.

1. Click **Run Search!** to run your search.

2. Click **Move-Up** to move the selected row up in the Search Builder table.

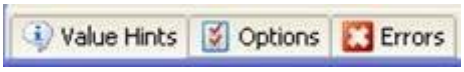
3. Click **Move-Down** to move the selected row down.

4. Click **Add Row Above** to insert a row above the highlighted row.

5. Click **Add Row Below** to insert a row below the highlighted row.

6. Click **Delete Row** to delete the highlighted row.

Value Hints, Options & Errors



These tabs appear at the bottom of the Search Button window. Information related to these tabs is displayed in the area just above them.

1. **Value Hints:** This option applies to statistical criteria and will display a definition of the selected statistic and hints related to values the user could enter for that statistic.
2. **Options:** There five available options.
    i. "View Criteria By" option to view your **Criteria** selection list by category or alphabetically.
    ii. "Automatically Launch Search Report Window": This option will automatically launch the search report when the search is complete. (Note: Depending on the size of your database, the search report could take some time to run. You may want to uncheck this box. You will always have the option to manually run the search report when your searches have run.)

iii. "Use PerTrac ID Fund Groupings and Data Vendor Priority": This option when checked will result in a "de-duplicated" universe that contains only one record for each investment when you search is complete. In the case of duplicate records for an investment, PerTrac will choose which record to keep in the results universe based on your data vendor priority selected on the PerTrac **Preferences** tab.

iv. "Optimize Search": This option when checked allows the search to process and evaluate criteria in the quickest order possible. If turned on, qualitative criteria will be evaluated before quantitative criteria regardless of the order listed in your search. When unchecked, your search will be run in the order you specify.

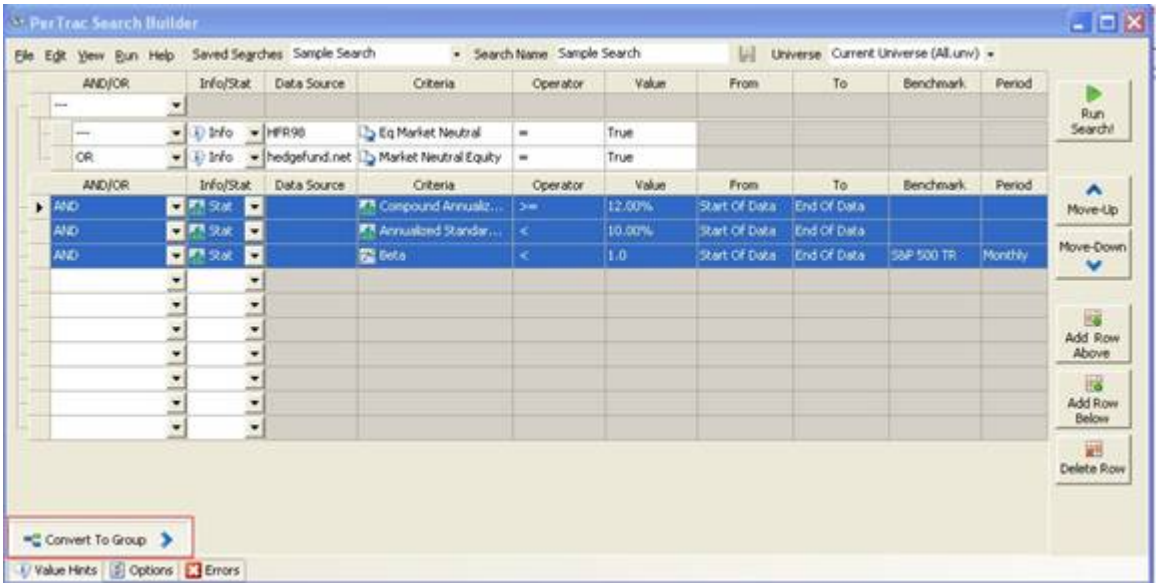
v. "Force Search Criteria to Check All Criteria": This option when checked forces the search to find all specified criteria values for all investments. This is useful for creating reports. By default, which is unchecked, the search will process as few criteria as possible to determine if an investment passes or fails a search. For a given fund, depending on the logical structure of your search, PerTrac may not need to evaluate all criteria. (For example, if this option is unchecked and an investment fails the criterion specified in the first row of the Search Builder table and the criterion in the second row is linked by the **And** operator, PerTrac will not continue checking to see if the investment passes the criterion specified in the second row since an investment must pass both the first AND second criteria in order to make it into the results universe. This allows the search to run as quickly as possible.)

Note: The one option that all users will generally wish to have checked on a regular basis is the "Use PerTrac ID Fund Groupings and Data Vendor Priority" to produce search universes that contain no duplicate funds.

3. Errors: This tab will list any errors generated when running your search. Typically, the errors will refer to selected criteria values entered or the logical order of your search criteria.

Grouping (Nesting) Your Criteria

Search Builder allows for grouping your "**And"** statements or "**Or"** statements based on the logical order of your search criteria. For example, if you wanted to find all HFR market neutral funds **or** Hedgefund.net market neutral funds prior to running your **Stat** criteria, you would group together your **Info** criteria to find all market neutral funds first. See the screen below.



In addition, you could highlight the **Stat** criteria rows and click **Convert To Group** on the lower left to create a group of your **And** criteria.

Note: You can group funds from the **Edit** button on the menu bar, by right-clicking on a row, or by way of the **Convert to Group** button that appears when you highlight rows.

TIP: It might be useful to first define all of your **Info** and **Stat** criteria, determine the logical order you want to run your search criteria, then group your **And/Or** statements.

Setting Up and Running a Search in Search Builder

1. Starting at the first row, click the down arrow under the **"Info/Stat"** column.
2. Click **Info** to select a qualitative criterion from the investment information pages, or **Stats** to select a quantitative criterion.
3. If you select **Info** you will then choose a **Data Source** and make selections under **Criteria**, **Operator** and **Value.**
4. If you select **Stats** you will then make selections under **Criteria**, **Operator**, **Value, From & To** (to set your date range), **Period** and possibly **Benchmark,** depending on the stat selected.
5. Enter a name for your search in the **Search Name** field at the top, then click **Save** next to that field.

6. Click **Run Search!**
7. When the search is complete the following window will appear. This window contains the name of your search; the universe on which the search was run; and the percent and number of funds that passed and failed the search. There are also four button options:

a) Save Universe: Opens the **Save As** window to your default universe folder.

b) Open Search Report Window: Search Builder generates three detailed search reports, each of which is discussed in the section below. This option, however, will open the reports in the Search Builder.

c) Open Search Report in Excel: This will export the search report and open it as an Excel spreadsheet.

d) Save Search Report as an Excel File: This option saves the report as an .xls file that can later be opened in Excel.

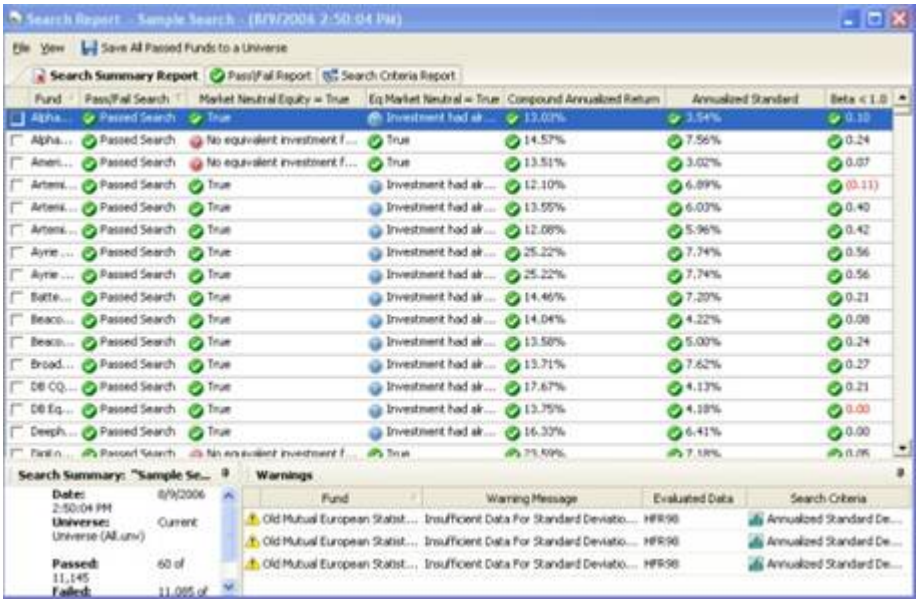
TIP:

Once you have created and saved your searches, you can access them quickly from the Home window upper toolbar. We have added a **Searches** drop-down menu. This will allow you to select a saved search, which will then automatically open the search window.

II. Search Reports

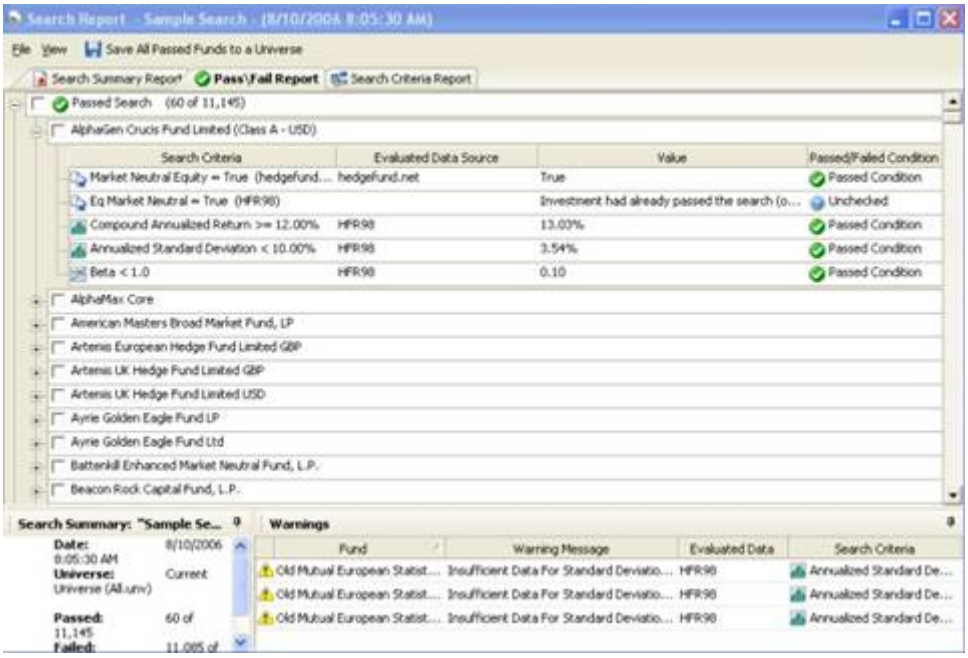
PerTrac Search Builder has the ability to generate three detailed search reports: Search Summary Report, Pass/Fail Report, and Search Criteria Report.

1. Search Summary Report:



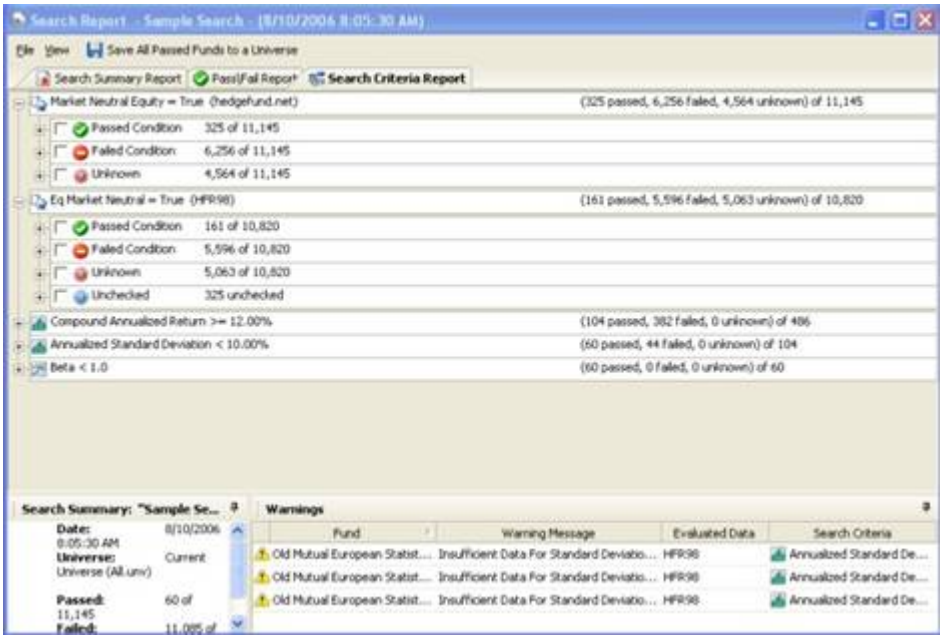
The **Search Summary Report** lists all funds in the universe on which your search was run. By default the report is sorted by the funds that passed your search criteria. In the lower left corner you will find a summary table indicating how many funds passed and failed. In this example the search was run on the All.unv universe (entire database) and resulted in 60 of 11,145 passed and 11,085 of 11,145 failed. This is a columnar report showing the search criteria as column labels and the values for all criteria for all investments. If the investment passed on a criterion, a green check mark icon appears next to the result for that criterion. If it failed on a criterion, a red X icon appears next to the result.

2. Pass\Fail Report:



The **Pass\Fail Report** lists all funds in the universe your search was run on. When the report opens you will have two expandable options: **Passed Search** and **Failed Search**. When you expand either of these options, the list of funds that passed or failed will be visible. These too are expandable by fund. Click the "plus" sign next to a fund to view, in row format, your search criteria.

3. Search Criteria Report:


Search Report - Sample Search - (8/10/2006 8:05:30 AM)
File View Save All Passed Funds to a Universe
Search Summary Report Pass\Fail Report Search Criteria Report
Market Neutral Equity = True (hedgefund.net)
(325 passed, 6,256 failed, 4,564 unknown) of 11,145
Passed Condition 325 of 11,145
Failed Condition 6,256 of 11,145
Unknown 4,564 of 11,145
Eq Market Neutral = True (HFR98)
(161 passed, 5,596 failed, 5,063 unknown) of 10,820
Passed Condition 161 of 10,820
Failed Condition 5,596 of 10,820
Unknown 5,063 of 10,820
Unchecked 325 unchecked
Compound Annualized Return >= 12.00%
(104 passed, 382 failed, 0 unknown) of 486
Annualized Standard Deviation < 10.00%
(60 passed, 44 failed, 0 unknown) of 104
Beta < 1.0
(60 passed, 0 failed, 0 unknown) of 60
Search Summary: "Sample Se...
Date: 8/10/2006 8:05:30 AM
Universe: Current Universe (All.unv)
Passed: 60 of 11,145
Failed: 11,085 of
Warnings
Fund
Warning Message
Evaluated Data
Search Criteria
Old Mutual European Statist...
Insufficient Data For Standard Deviatio...
HFR98
Annualized Standard De...

The **Search Criteria Report** provides a detailed breakdown of which funds passed or failed at the criterion level. Each of the search criteria will be listed by row, which can then be expanded to show a summary of the number of funds that passed or failed each individual criterion. You can then expand the passed or failed options to view the list of funds.

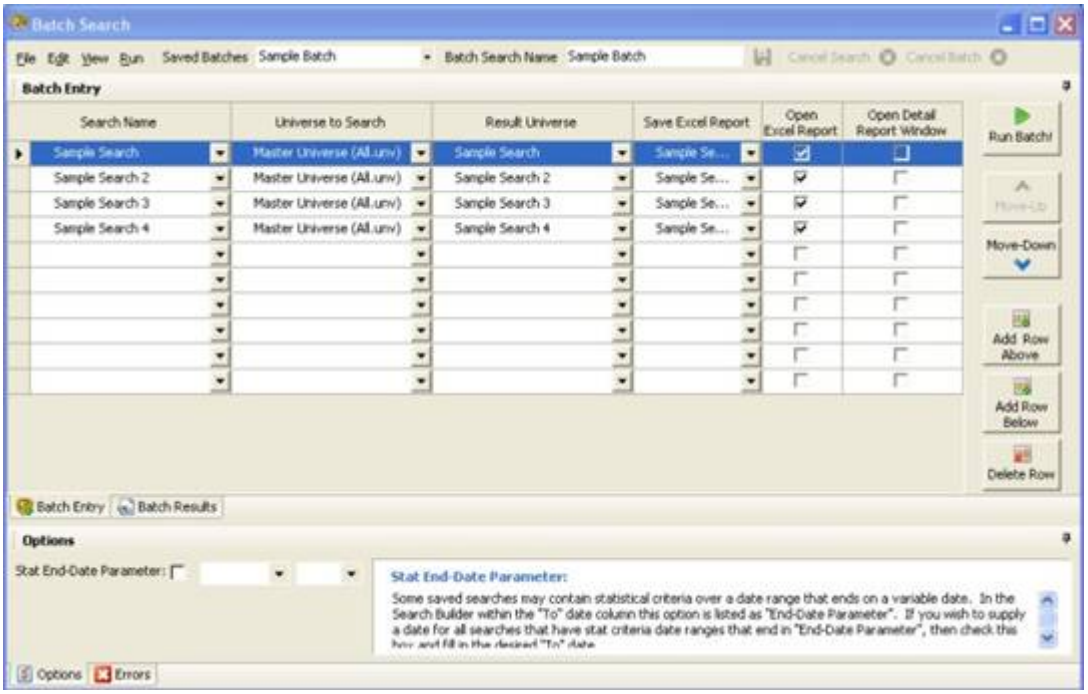
Note: There is a Warnings box located at the bottom of all three reports. This window will list funds with bad or insufficient data. In this example report window above, the funds listed in the Warnings box did not have sufficient (at least two months) data to calculate the standard deviation search criterion.

TIP: To create a universe of just the passed funds click the save option on the menu bar “Save All Passed Funds to a universe”. This is helpful if you had not saved your passed funds as a universe prior to generating the report. In addition, the funds listed in all three reports will have check boxes in front of the fund name. Use these check boxes to create a universe of just your checked funds. When you have selected the funds to be included in the universe, click **File** on the menu bar and select “Create Universe from Checked Funds”.

4. Open Search Report in Excel: This option will export the **Search Summary Report** to Excel.

III. Batch Searches

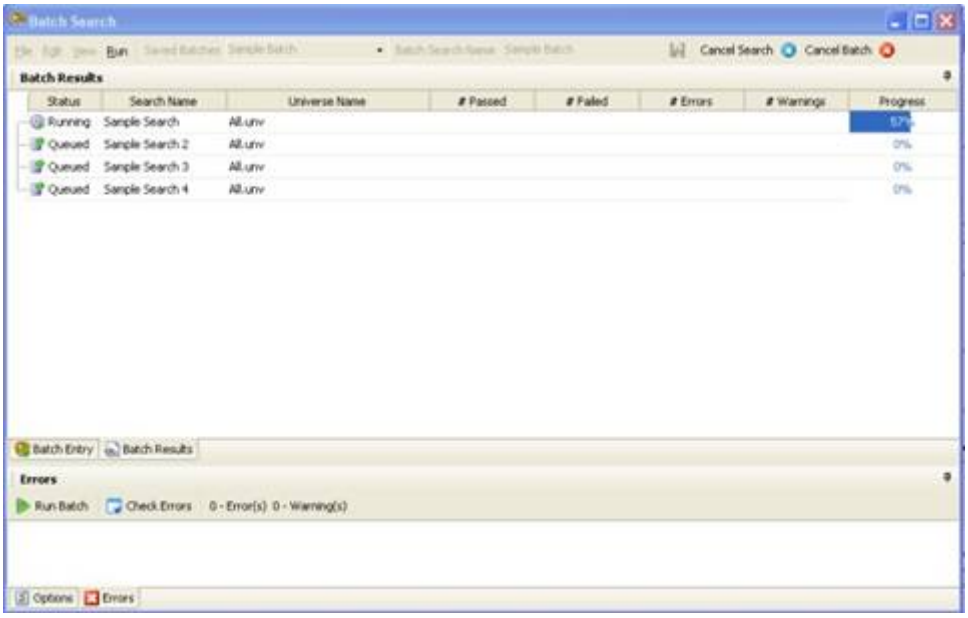
This feature will allow you to batch run any number of saved search files created with the **Search Builder**. For example, perhaps you create 15 peer universes each month. In the past you would have to possibly run numerous individual searches and then save each resulting universe. With **Search Builder** you can now save each of the 15 peer searches as search files. Using the new **Batch Searches** you can run all 15 saved searches at one time. The **Batch Search** feature can be accessed with the Search button at the top of the PerTrac window or from the **Tools** menu in the menu bar. Once selected the **Batch Search** window will appear.


Batch Search
File Edit View Run
Saved Batches Sample Batch
Batch Search Name Sample Batch
Batch Entry
Search Name
Universe to Search
Result Universe
Save Excel Report
Open Excel Report
Open Detail Report Window
Sample Search
Master Universe (All.unv)
Sample Search 2
Sample Search 3
Sample Search 4
Run Batch!
Move-Up
Move-Down
Add Row Above
Add Row Below
Delete Row
Batch Entry
Batch Results
Options
Stat End-Date Parameter:
Stat End-Date Parameter:
Some saved searches may contain statistical criteria over a date range that ends on a variable date. In the Search Builder within the "To" date column this option is listed as "End-Date Parameter". If you wish to supply a date for all searches that have stat criteria date ranges that end in "End-Date Parameter", then check this
Options
Errors

Setting up and running a batch search is simple.

1. **Search Name:** Click the down arrow in the Search Name column to select your saved searches. There is no limit to the number of saved searches that can be included in the batch search.
2. **Universe to Search:** For each of your searches selected in the Search Name column, select the universe you want to search. Click the down arrow to select the universe. If you are searching on your entire database, select “Master Universe (All.unv)”.
3. **Result Universe:** For each saved search the resulting universe will have to be named. You can type a name directly into the field, or click the down arrow to select a universe name from your default universe folder.
4. **Save Excel Report:** When batch running your saved searches you can elect to have the Search Summary Report automatically generated and saved as an Excel file. Enter names for you Excel files in this column, or click the down arrow to select a previously saved .xls file.
5. **Open Excel Report:** Checking this option will open the Search Summary Report in Excel for each of the searches in your batch run.
6. **Open Detail Report Window:** Checking this option will open the Search Report window in PerTrac for each of the searches in your batch run. The Search Report window, as mentioned above contains three reports: Search Summary Report, Pass/Fail Report and Search Criteria Report. A separate Search Report window will open for each saved search in your batch search.

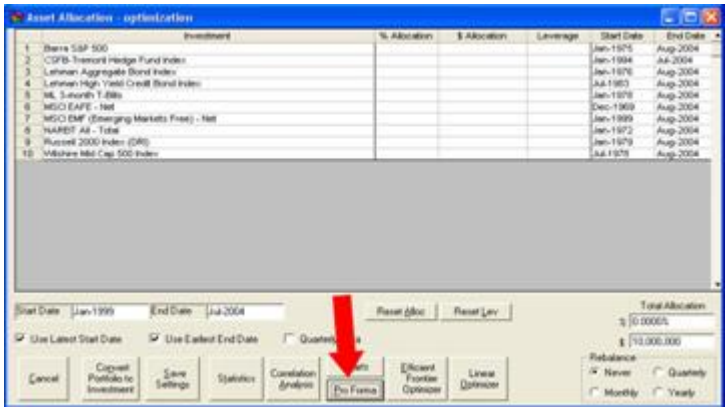
7. **Batch Search Name:** When all selections have been made, save the batch search as a file. Type a name for your batch search in the “Batch Search Name” box on the upper menu bar. Click **Save** icon to save your file.
8. **Saved Batches:** When you enter the batch search window click the down arrow on the “Saved Batches” drop-down menu on the upper menu bar to select your previously saved batch search files.
9. **Run Batch! :** Click **Run Batch!** with the green arrow icon to begin the batch run. When you run the batch search the following “Batch Results” window will appear.



This window will indicate which search is running, its percent completed progress, and which searches are in the queue.

Note: Located on the lower left side of the **Batch Search** window you will notice an option for “Stat End-Date Parameter”. Remember this is an option in the **“To”** field for the end date in the Search Builder window. This option is a shortcut when running searches each month, allowing the statistic to be calculated through the new month end date. It saves you from having to enter the new end date each month. Check the “Stat End-Date Parameter” box on the Batch Search window if any of your searches contain statistics criteria with “End-Date Parameter”.

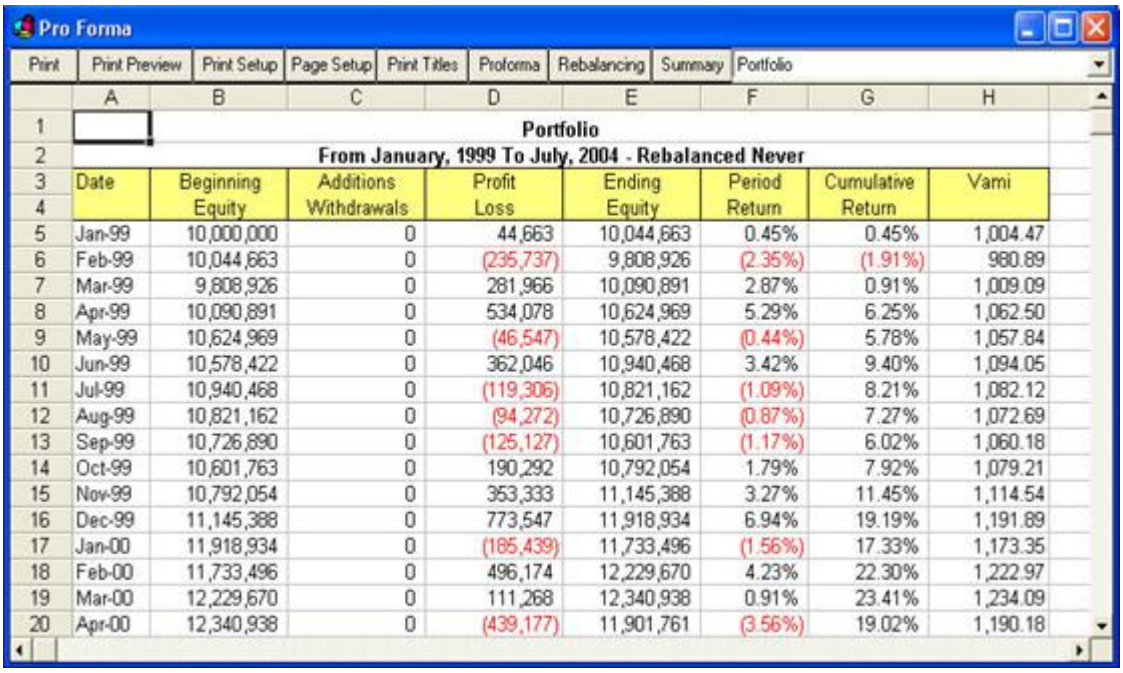
3.06 - Pro Forma Table



The **Pro Forma** tables allow you to view a variety of historical performance and summary data based on the allocation settings for the current universe. To open the **Pro Forma Window**, click the **Pro Forma** button from the **Asset Allocation Window**. At the top of the window, you will see the **Pro Forma**, **Rebalancing**, and **Summary** buttons. These allow you to quickly navigate among the three tables contained in this window. When the **Pro Forma Window** is first opened, the **Pro Forma Performance Table** appears.

Pro Forma Table

This table provides monthly or quarterly data, depending on your selection in the **Asset Allocation Window**. The pull down menu in the top right corner of the window contains a list of each investment in the portfolio, allowing you to view the data for an individual investment. The list also contains a “Portfolio” selection that will re-display the data for the entire portfolio. The **Pro Forma Performance Table** includes the following columns:



Pro Forma

Print | Print Preview | Print Setup | Page Setup | Print Titles | Proforma | Rebalancing | Summary | Portfolio

Portfolio

From January, 1999 To July, 2004 - Rebalanced Never

Date	Beginning Equity	Additions Withdrawals	Profit Loss	Ending Equity	Period Return	Cumulative Return	Vami
Jan-99	10,000,000	0	44,663	10,044,663	0.45%	0.45%	1,004.47
Feb-99	10,044,663	0	(235,737)	9,808,926	(2.35%)	(1.91%)	980.89
Mar-99	9,808,926	0	281,966	10,090,891	2.87%	0.91%	1,009.09
Apr-99	10,090,891	0	534,078	10,624,969	5.29%	6.25%	1,062.50
May-99	10,624,969	0	(46,547)	10,578,422	(0.44%)	5.78%	1,057.84
Jun-99	10,578,422	0	362,046	10,940,468	3.42%	9.40%	1,094.05
Jul-99	10,940,468	0	(119,306)	10,821,162	(1.09%)	8.21%	1,082.12
Aug-99	10,821,162	0	(94,272)	10,726,890	(0.87%)	7.27%	1,072.69
Sep-99	10,726,890	0	(125,127)	10,601,763	(1.17%)	6.02%	1,060.18
Oct-99	10,601,763	0	190,292	10,792,054	1.79%	7.92%	1,079.21
Nov-99	10,792,054	0	353,333	11,145,388	3.27%	11.45%	1,114.54
Dec-99	11,145,388	0	773,547	11,918,934	6.94%	19.19%	1,191.89
Jan-00	11,918,934	0	(185,439)	11,733,496	(1.56%)	17.33%	1,173.35
Feb-00	11,733,496	0	496,174	12,229,670	4.23%	22.30%	1,222.97
Mar-00	12,229,670	0	111,268	12,340,938	0.91%	23.41%	1,234.09
Apr-00	12,340,938	0	(439,177)	11,901,761	(3.56%)	19.02%	1,190.18

- **Date** - For monthly data, this will display the month and year of the data in that row. For quarterly data, the date will be the last month in the relevant quarter.
- **Beginning Equity** - The first value for this column is the dollar amount that was originally entered in the Total Allocation box or, for individual investments, the corresponding percentage of that dollar amount.
- **Additions/Withdrawals** - This column shows the equity added or withdrawn from each investment during re-balancing. On the portfolio table, this column will be blank because the re-balancing assumptions only affect the individual investments.
- **Profit/Loss** - The calculated dollar profit or loss for the month or quarter.
- **Ending Equity** - beginning equity plus additions and withdrawals, and plus qrofit or minus loss.
- **Period Return** - Dollar Profit/Loss divided by the sum of Beginning Equity plus Deposits and Withdrawals.
- **Cumulative Return** - The cumulative investment return since inception of the portfolio.
- **VAMI** - The Value Added Monthly Index, which is the growth of $1,000.

NOTE – Withdrawals are always displayed as a negative number.

Rebalancing Table

This table lists the additions and withdrawals for each individual investment that were made to accommodate the re-balancing specifications.

Summary Table

This table contains a column for each investment in the portfolio, as well as the portfolio as a whole, that displays the dollar value allocations to each investment. When this table is opened, the drop down box located at the top right of the window will contain the names of each category in the **Pro Forma Performance Table**, allowing you to select the category of data to be displayed. This feature is ideal for quick comparative analysis of the individual components of the current portfolio.

Printing, Editing and Saving Pro Forma Tables

The **Pro Forma Window** also contains the standard options for editing, reformatting, printing, and saving your tables. Double-right-clicking over a pro forma table opens the **Workbook Designer** and displays a fully editable version of the table.

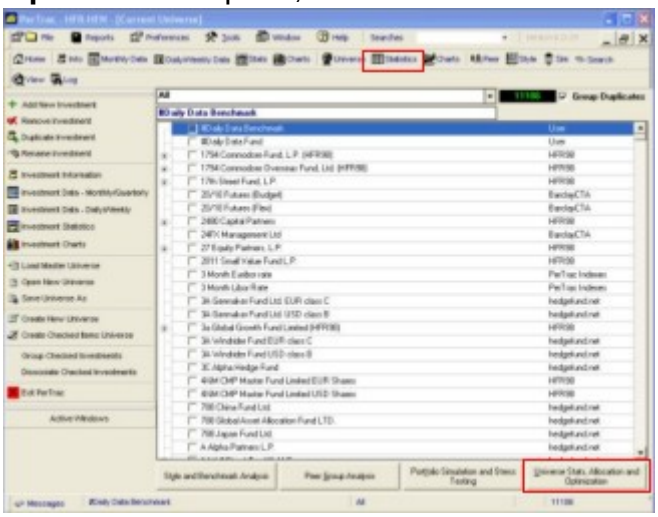
To save a pro forma table for future reference, select **Write** from the **File** menu of the Workbook Designer. This opens the **Write File** dialog box, allowing you to name and determine the location of the saved file. You can even save the table as an Excel file by selecting (*.xls) in the **Save as type** pull down menu.

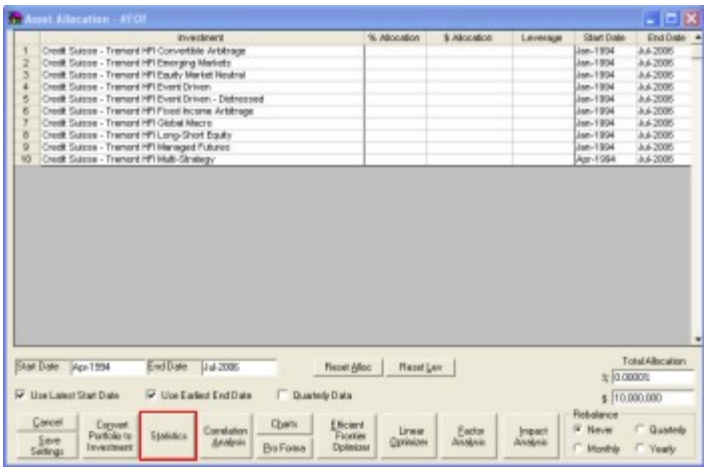
Command Buttons

- **Print** - Prints the pro forma table.
- **Print Preview** - Allows you to preview the pro forma table before printing.
- **Print Setup** - Provides options for setting the printer parameters before printing.
- **Page Setup** - Provides formatting options for the pro forma table.
- **Print Titles** - Allows you to format the titles of a pro forma table before printing.
- **Pro Forma** - Displays the Pro Forma Performance Table.
- **Re-balancing** - Displays the **Re-balancing Table**.
- **Summary** - Displays the **Summary Table**.

3.07 - Universe Statistics - View the online tutorial!

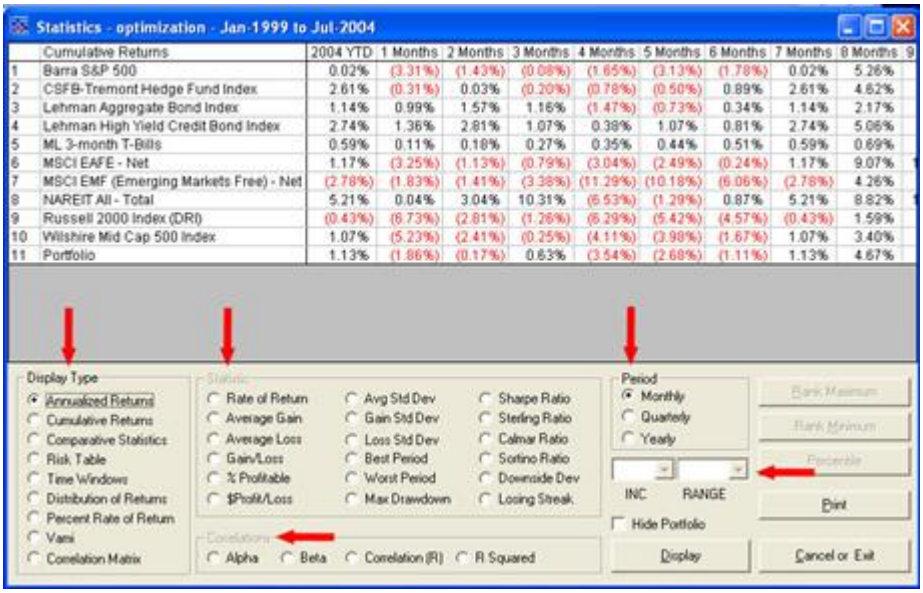
The **Universe Statistics Window** allows you to display a variety of statistics for each investment in the current universe. To open the **Universe Statistics Window**, click the **Statistics** button from the **Universe Stats Allocation and Optimization** option, or click **Statistics** on the PerTrac Navigation Bar.





TIP – Always have a universe with only the investments you want to use prior to launching the **Universe Statistics Window**. Many statistics are calculated within this module and it would take considerable time to generate statistics on an entire database or a similarly large number of funds.

The top of the **Universe Statistics Window** contains a row for each investment in the portfolio, as well as a row for the portfolio as a whole, to display the selected statistics. The bottom of the **Universe Statistics Window** allows you to select which statistics are displayed.


Statistics - optimization - Jan-1999 to Jul-2004
Cumulative Returns | 2004 YTD | 1 Months | 2 Months | 3 Months | 4 Months | 5 Months | 6 Months | 7 Months | 8 Months
1 Barra S&P 500 | 0.02% | (3.31%) | (1.43%) | (0.08%) | (1.65%) | (3.13%) | (1.78%) | 0.02% | 5.26%
2 CSFB-Tremont Hedge Fund Index | 2.61% | (0.31%) | 0.03% | (0.20%) | (0.78%) | (0.50%) | 0.89% | 2.61% | 4.62%
3 Lehman Aggregate Bond Index | 1.14% | 0.99% | 1.57% | 1.16% | (1.47%) | (0.73%) | 0.34% | 1.14% | 2.17%
4 Lehman High Yield Credit Bond Index | 2.74% | 1.36% | 2.81% | 1.07% | 0.38% | 1.07% | 0.81% | 2.74% | 5.06%
5 ML 3-month T-Bills | 0.59% | 0.11% | 0.18% | 0.27% | 0.35% | 0.44% | 0.51% | 0.59% | 0.69%
6 MSCI EAFE - Net | 1.17% | (3.25%) | (1.13%) | (0.79%) | (3.04%) | (2.49%) | (0.24%) | 1.17% | 9.07%
7 MSCI EMF (Emerging Markets Free) - Net | (2.78%) | (1.83%) | (1.41%) | (3.38%) | (11.29%) | (10.18%) | (6.06%) | (2.78%) | 4.26%
8 NAREIT All - Total | 5.21% | 0.04% | 3.04% | 10.31% | (6.53%) | (1.29%) | 0.87% | 5.21% | 8.82%
9 Russell 2000 Index (DRI) | (0.43%) | (6.73%) | (2.81%) | (1.26%) | (6.29%) | (5.42%) | (4.57%) | (0.43%) | 1.59%
10 Wilshire Mid Cap 500 Index | 1.07% | (5.23%) | (2.41%) | (0.25%) | (4.11%) | (3.98%) | (1.67%) | 1.07% | 3.40%
11 Portfolio | 1.13% | (1.86%) | (0.17%) | 0.63% | (3.54%) | (2.68%) | (1.11%) | 1.13% | 4.67%
Display Type
Annualized Returns
Cumulative Returns
Comparative Statistics
Risk Table
Time Windows
Distribution of Returns
Percent Rate of Return
Vami
Correlation Matrix
Statistic
Rate of Return
Average Gain
Average Loss
Gain/Loss
% Profitable
$Profit/Loss
Avg Std Dev
Gain Std Dev
Loss Std Dev
Best Period
Worst Period
Max Drawdown
Sharpe Ratio
Sterling Ratio
Calmar Ratio
Sortino Ratio
Downside Dev
Losing Streak
Correlations
Alpha
Beta
Correlation (R)
R Squared
Period
Monthly
Quarterly
Yearly
INC
RANGE
Hide Portfolio
Display
Rank Maximum
Rank Minimum
Percentile
Print
Cancel or Exit

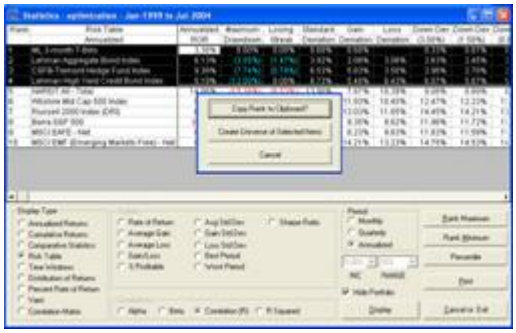
- **Display Type** - The Display Type options are located at the lower left of the window and include the different types of statistical displays you can create. When a display type is chosen, the relevant options for that display type will be activated at right, allowing you to further refine the display.
- **Statistic** - Selecting **Comparative Statistics** or **Time Windows** from the Display Type options activates the Statistics options allowing you to select the particular statistic to display.
- **Correlations** - Selecting **Correlation Matrix** from the Display Type options activates the Correlations options allowing you to select the type of correlation to be used.
- **Period** - Certain display types allow you to select a time period (monthly, quarterly, or yearly) for which statistics are calculated.
- **Increment** & **Range** - The **Distribution of Returns** option requires the selection of the increments at which the returns are grouped, as well as a range (above and below zero) for which data is displayed.
- **Hide Portfolio** - Checking this box hides the row that displays the statistics for the portfolio as a whole, so that only statistics for the individual investments remain. Not checking **Hide Portfolio** allows you to quickly view the aggregate portfolio's statistics without having to **Convert Portfolio to Investment.**

Once you have selected all the necessary options, clicking **Display** shows the results.

Ranking Investments

Once you have displayed a table of statistics, you can rank the investments according to a particular statistic by highlighting that column and clicking either **Rank Maximum** or **Rank Minimum**. This is particularly useful when working with a large portfolio. Clicking the **Percentile** button will change the numerical rank column, on the far left, to a percentile rank column. Once the investments are sorted you may immediately create a new universe simply by highlighting a range of investments, right-clicking over the highlighted area, and then clicking **Create Universe of Selected Items**.

Printing, Editing, & Saving Universe Statistics



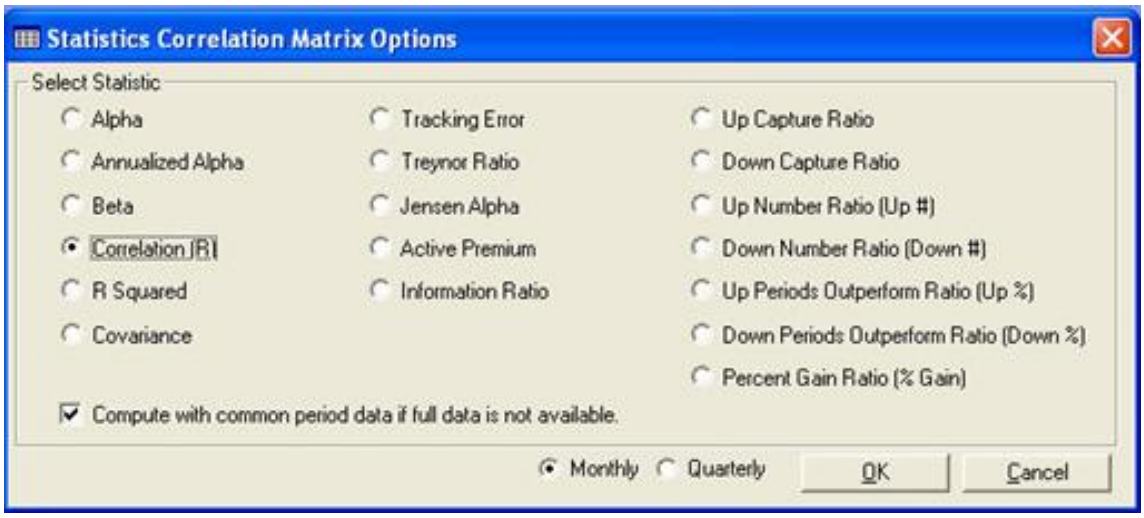
Right-clicking over a **Universe Statistics** table allows you to copy it to the clipboard, so you can then paste the information in another program. Clicking **Print** opens a printable copy of the table, including standard preview and setup options. Double right-clicking over the table opens the **Workbook Designer**, giving you full editing capabilities and allowing you to save the table for future use.

Command Buttons

- **Display** - Calculates and displays the current selection of statistics
- **Rank Maximum** - Ranks each investment by a selected statistic, from highest to lowest.
- **Rank Minimum** - Ranks each investment by a selected statistic, from lowest to highest.
- **Percentile** - Shows the percentile ranking of each investment rather thatn its numerical rank.
- **Print** - Opens a printable copy of the table, complete with editing options.
- **Cancel or Exit** - Closes the **Universe Statistics Window**.

3.08 - Correlation Analysis - View the online tutorial!

Correlation statistics can be accessed by clicking **Correlation Analysis** from the **Asset Allocation Window**.



1. From the **Statistics Correlation Matrix Options Window**, select a statistic for the **Correlation Matrix**.
2. If you would like to build a correlation matrix, even though some investments have insufficient data, check the box in the lower left corner.
3. Select whether to use either monthly or quarterly calculations.
4. Click **OK**.

Correlation Matrix

Print Statistics Correlation Tables

Print | Print Preview | Print Setup | Page Setup | PrintTitles | Save As | Select Statistic

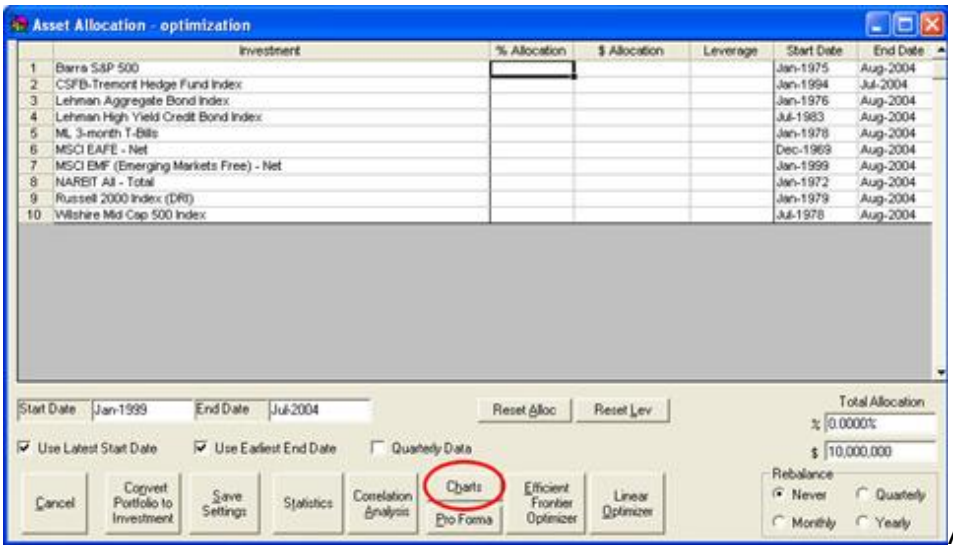
	A	B	C	D	E	F	G	H	I	J	K
1	Correlation Coefficient Jan-1999 to Jul-2004	Barra S&P 500	CSFB-Tremont Hedge Fund Index	Lehman Aggregate Bond Index	Lehman High Yield Credit Bond Index	ML 3-month T-Bills	MSCI EAFE - Net	MSCI EMF (Emerging Markets Free) - Net	NAREIT All - Total	Russell 2000 Index (DRI)	Wilshire Mid Cap 500 Index
2	Barra S&P 500	1.000	0.395	-0.219	0.453	-0.047	0.838	0.757	0.225	0.682	0.814
3	CSFB-Tremont Hedge Fund Index	0.395	1.000	0.103	0.359	0.018	0.545	0.576	0.092	0.714	0.715
4	Lehman Aggregate Bond Index	-0.219	0.103	1.000	0.076	0.129	-0.127	-0.192	0.053	-0.148	-0.155
5	Lehman High Yield Credit Bond Index	0.453	0.359	0.076	1.000	-0.174	0.467	0.588	0.254	0.535	0.501
6	ML 3-month T-Bills	-0.047	0.018	0.129	-0.174	1.000	-0.141	-0.137	-0.077	-0.071	-0.035
7	MSCI EAFE - Net	0.838	0.545	-0.127	0.467	-0.141	1.000	0.787	0.283	0.749	0.830
8	MSCI EMF (Emerging Markets Free) - Net	0.757	0.576	-0.192	0.588	-0.137	0.787	1.000	0.313	0.763	0.803
9	NAREIT All - Total	0.225	0.092	0.053	0.254	-0.077	0.283	0.313	1.000	0.383	0.331
10	Russell 2000 Index (DRI)	0.682	0.714	-0.148	0.535	-0.071	0.749	0.763	0.383	1.000	0.946
11	Wilshire Mid Cap 500 Index	0.814	0.715	-0.155	0.501	-0.035	0.830	0.803	0.331	0.946	1.000
12											
13											

The **Correlation Table** includes standard preview and setup options, as well as a **Save As** button, which allows you to save the table for future use. Clicking **Select Statistic** allows you to change the displayed correlation statistic.

Again, double right-clicking over this table opens the **Workbook Designer**, providing more advanced editing capabilities.

3.09 - Universe Charts - View the online tutorial!

Creating charts for a universe of investments is just as easy as creating charts for an investment. To open the **Universe Charts Window**, click the **Charts** button from the **Asset Allocation Window**.

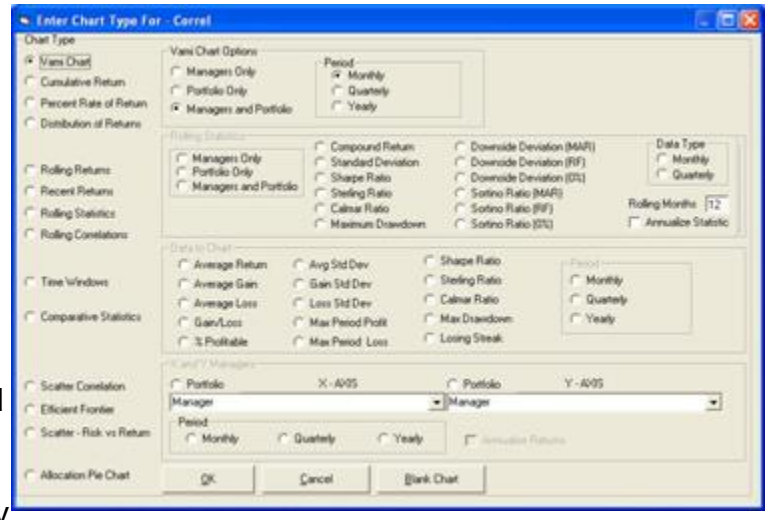


As with the **Investment Charts Window**, you will notice a selection of chart types along the left side of the window and some options areas to further refine your chart.

Creating a Universe Chart

The following is a simplified list of the steps required to create a universe chart.

NOTE: the **Start Date** and **End Date** that you entered in the **Asset Allocation Window** will define the time period used for a universe chart.



1. Click the desired chart type from the list at the left of the window.
2. Select the relevant chart options to suit your needs.
3. Click **OK** to display the chart.
4. Customize the chart using the **Chart Designer**, **Edit Chart Data**, or **Wizard** options from the pop-up menu.
5. You can also print, copy or save the chart from the pop-up menu. Once a chart has been saved, you may open it by selecting **Load Chart** from the **File Menu**. If you chose to copy the chart, it can be pasted into another application. In Microsoft applications, "Paste Special" and "Paste" the chart as a picture and paste will display the underlying data.

To create additional charts without closing an existing chart, click the **Charts** button on the **Tool Bar** at the top of the screen.

Chart Options

Geometric Statistic Charts

The following options are associated with the chart types in the upper left corner of the window: **VAMI**, **Cumulative Return**, **Percent Rate of Return**, and **Distribution of Returns.**

- **Managers/Portfolio Options** - Check one of these boxes to indicate whether you want to chart the performance of the individual managers, the performance of the portfolio only, or both.
- **Period** - Period may be monthly, quarterly, or yearly.

Rolling Returns & Recent Returns Charts

- **Manager/Portfolio Options** - Same as above.
- **Display Options** – Select Annualize Returns, Normalize Returns, or Total Return.
- **Periods to Display** - You can select rolling return periods from 1 to 60 months and recent return periods from 1 month to 10 years.

Rolling Statistics

- **Manager/Portfolio Options** - Same as above.

- **Display Options** – Compound return, standard deviation, Sharpe Ratio, Sterling Ratio, Calmar Ratio, maximum drawdown, downside deviation (MAR, RF, 0), Sortino Ratio (MAR, RF, 0).
- **Rolling Periods -** Select the **Number of Rolling Months** and whether or not to annualize the statistic.
- **Periods to Display** – The rolling statistics charts can be generated on a monthly or quarterly basis.

Rolling Correlations

- **Manager/Portfolio Options** - Same as above.
- **Display Options** – Alpha, Beta, Correlation-R, R-Squared, Tracking Error, Beta T-Stat and Information Ratio
- **Benchmark Selection** – Select the benchmark on which the correlation statistics will be calculated. By default, PerTrac will list the benchmarks in your **Correl.unv** correlation universe.
- **Rolling Periods -** Select the **Number of Rolling Months** and whether or not to annualize the statistic.
- **Periods to Display** – The rolling statistics charts can be generated on a monthly or quarterly basis.

Time Windows Charts

The selected statistic will be charted for time periods ranging from 1 to 60 months.

Comparative Statistics Charts

The selected statistic will be charted for the period selected (monthly, quarterly, or yearly).

Scatter Correlation & Efficient Frontier

- **X-Axis** & **Y-Axis** - To assign an investment to an axis, select it from the pull down menu. To assign the entire portfolio to an axis, click **Portfolio**.
- **Period** - Periods may be monthly, quarterly, or yearly.
- **Annualize Returns** – Check this check box to annualize returns for the Efficient Frontier chart.

Scatter - Risk vs. Return

- **Period** - Same as above.
- **Annualize Scatter Risk Return Chart** – Check this box to display annualized statistics.

Allocation Pie Chart

This chart displays the allocations (as a percentage of the total portfolio) defined in the **Asset Allocation Window**.

Editing a Universe Chart

Each Universe Chart in PerTrac consists of several objects; including legends, axis titles, axis labels, and series points; that can be reformatted to suit your style or needs. For more information, see **Editing a Chart** under **Investment Charts**.

Universe Chart Examples

VAMI Chart

Suppose you would like to chart the monthly VAMI for each investment a universe, as well as the combined portfolio VAMI, based on your assigned allocations.

1. Select the **VAMI Chart** option on the left side of the window under **Chart Type**.
2. Select **Managers and Portfolio** under **VAMI Chart Options**.
3. Select **Monthly** under **Period**.
4. Click **OK** to display the chart**.**

Time Windows

Suppose you want to view a chart showing average standard deviation for various time windows for each investment in the universe.

1. Select the **Time Windows** option on the left side of the window under **Chart Type**.
2. Select **Avg Std Dev** from the list of statistics under **Time Windows Options**.
3. Click **OK** to display the chart.

Comparative Statistics

Suppose you want to compare the quarterly Sharpe ratio between investments for a specified time period.

1. Select the **Comparative Statistics** option on the left side of the window under **Chart Type**.

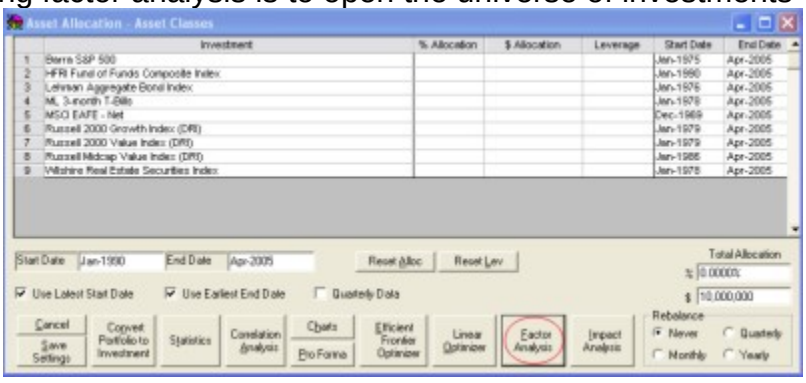
2. Select the **Sharpe Ratio** from the list of statistics in the **Comparative Statistics Options** frame.
3. Select **Quarterly** under **Period**.
4. Click **OK** to display the chart.

3.15 - Factor Analysis

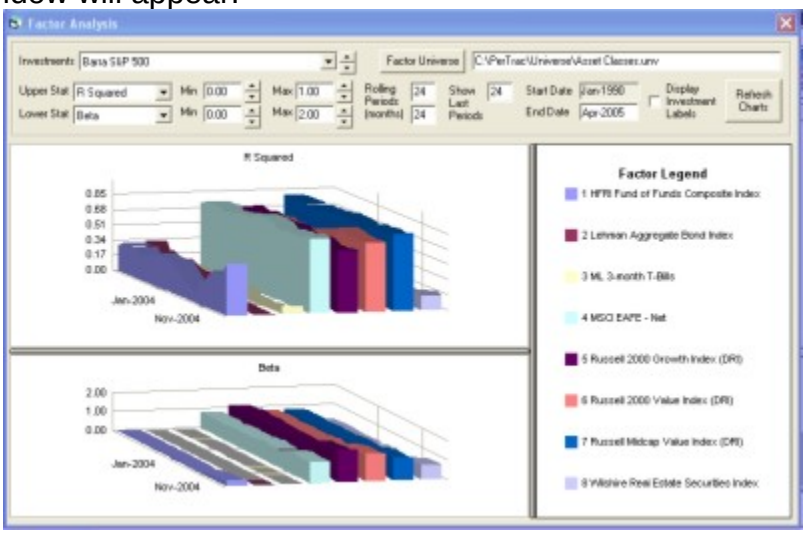
Factor analysis is a new feature added to the universe allocation window. This module will give you the ability to track the historical and current correlation statistics between the investments in a portfolio or universe, or the correlation statistics between investments in a portfolio or universe with other investments or benchmarks not in the portfolio. This feature will indicate whether or not your portfolio is indeed diversified, or if your funds are becoming more correlated. At the same time you can select an investment from your portfolio and view the correlation statistics relative to a **Factor Universe** to determine your risk exposure. The Factor Universe can be any saved universe of investments. Statistics for analysis include: Alpha, Beta, Correlation R, R-Squared, Information Ratio, Tracking Error and Beta T-Stat.

Note: The maximum number of investments allowed in the **Investments** universe or **Factor** universe is 100.

The first step to performing factor analysis is to open the universe of investments at the Pertrac **Home** window. On the left-hand side of the **Home** window click **Open New Universe** to select your universe. Then click **Universe Stats, Allocation and Optimization** at the bottom of the **Home** window to access the universe analysis tools, which now include **Factor Analysis**. When the universe allocation window appears click **Factor Analysis**.



The **Factor Analysis** window will appear.



The top section of the window will contain an **Investments** selection window, **Factor Universe** selection window, **Upper Stat-Lower Stat** windows to select two correlation statistics, **Min-Max** options for setting the chart scales, **Rolling Periods**, and **Start Date-End Date.** The analysis options are described below.

1. **Investments:** This is the first window on the upper left. By default the investment shown is the first investment, alphabetically, in the universe being analyzed. There is a drop-down arrow at the end of the window to select a different fund. You will also find spinner buttons (up/down arrows) next to most windows to quickly toggle through your universe of funds.

2. **Factor Universe:** This window allows you to select a universe other than the investment universe for analysis. By default the Upper and Lower charts will show selected correlation statistics of the fund shown in the **Investments** window relative to the other funds in the investment universe. When a **Factor** universe is selected the correlation statistics shown for the fund in the **Investments** window will be relative to the **Factor** universe.

3. **Upper Stat-Lower Stat**: Below the **Investments** window you will find **Upper Stat** and **Lower Stat** selection windows. Click the down arrows to select your two statistics. The upper stat will populate the upper chart, the lower stat the lower chart. The window to the right of the charts will contain the legend for both charts. The legend will contain the names of the funds in the **Investments** or **Factor** universes depending on which one you have selected.

4. **Min-Max:** The Min and Max options will allow you to set the Y-axis scales on the upper and lower charts.

5. **Rolling Periods:** This option allows you to enter the rolling periods over which the correlation statistics will be calculated.

6. **Show Last Periods:** This option with set the scale on the X-axis.

7. **Start Date-End Date:** These windows show the date range of your analysis. The start date shown will be the common date range of the funds in either the **Investments** or **Factor** universes. For example, if your **Investments** universe has a common date range of Jan-1990, that will be the

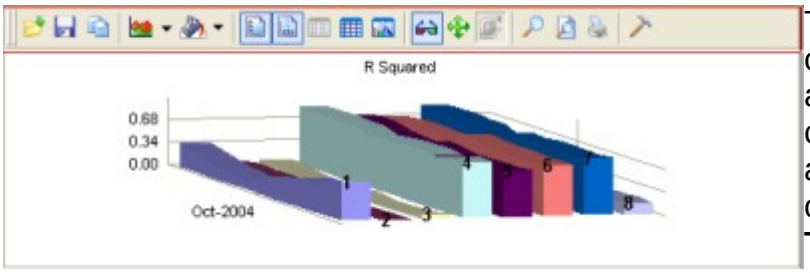
default start date. If you then select a **Factor** universe with a common start date of Jan-2000, the start date will adjust accordingly.

Note: The start date will only change when you select a **Factor** universe. You can not manually change the start date. You can, however, change the end date.

8. **Display Investment Labels:** Each investment in the chart legend is assigned a number. Click Display Investment Labels to add the investment number to the chart. This will help distinguish the investments on the chart.

9. **Refresh Charts:** Click the Refresh Charts button when you change any of the following options: **Rolling Periods, Show Last Periods**, or **End Date**. If you change any of the other options (Upper Stat, Lower Stat, Min, Max, Display Investment Labels) the charts will update automatically.

Chart Formatting and Export Options



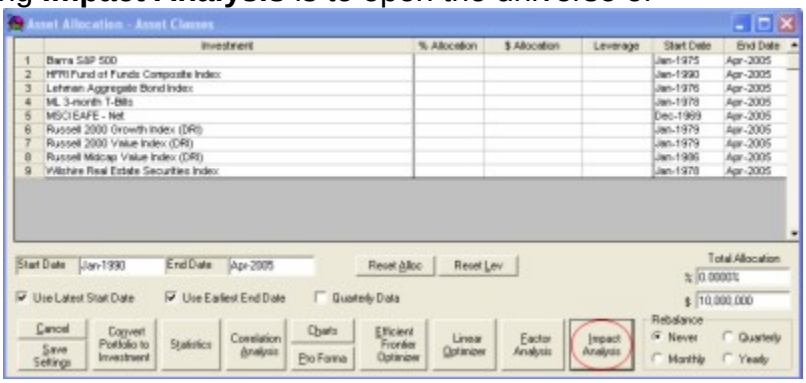
The Upper and Lower Stat charts can be edited, formatted and exported. The charts contain a hidden toolbar. To access the toolbar right-click on the chart and select **Toolbar.** The Toolbar will appear at the top of the chart. Once the Toolbar is visible you can save the chart, copy the chart and underlying data which can then be pasted to other programs, change the chart type, change the chart colors, and view the underlying data in a table format.

3.16 - Impact Analysis

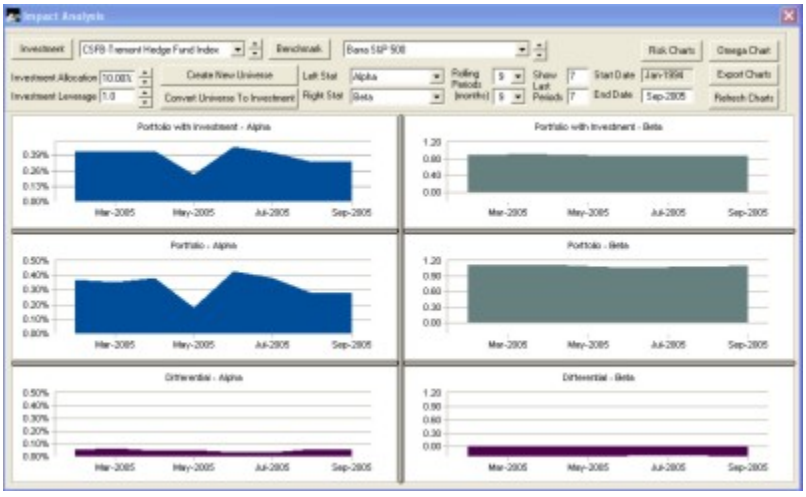
Impact Analysis is a new feature added to the universe allocation window. This module will give you the ability to analyze the affects of adding an investment to an existing portfolio. The analysis will provide you with before and after comparative statistics which include the changes in correlations statistics relative to a selected factor benchmark, risk table, risk charts showing the percent change in the risk table statistics after adding the new investment, and Omega

analysis showing the Omega function on the original portfolio and the portfolio with the new investment.

The first step to performing **Impact Analysis** is to open the universe of investments at the Pertrac **Home** window. On the left-hand side of the **Home** window click **Open New Universe** to select your universe. Then click **Universe Stats, Allocation and Optimization** at the bottom of the **Home** window to access the universe analysis tools, which now include **Impact Analysis**. When the universe allocation window appears click **Impact Analysis**.



The **Impact Analysis** window will appear.



The top section of the window contains an **Investment** selection window, **Benchmark** selection window, **Risk Charts**, **Omega Chart**, correlation statistic selection, **Rolling Periods**, **Start Date-End Date**, **Investment Allocation** to enter the allocation of the new fund added to the portfolio, and **Investment Leverage** if the new fund will be leveraged. Two correlation statistics (**Left Stat/Right Stat**)can be selected a one time. Three charts for the two selected correlation statistics will appear below the input selection area. The analysis options are described below.

1. Investment: This is the first window on the upper left. Click the **Investment** button to select the investment you want to add to your existing portfolio, or add to any universe opened prior to entering the impact analysis feature.

2. Benchmark: Select a benchmark for your correlation analysis. The new portfolio, created by adding your investment, will be regressed against the benchmark selected here. The available correlation statistics: Alpha, Beta,

Correlation R, R-Squared, Tracking Error, Beta T-Stat, and Information Ratio, will be selected with the **Left Stat - Right Stat** options.

3. Investment Allocation: Once you have selected an **Investment** to be added to your existing portfolio, this window allows you to set or change the allocation to your new investment. The allocations to your original portfolio investments will change proportionately based on the original allocations and the new fund you are adding to the portfolio.

4. Investment Leverage: If this new investment will be leveraged, enter the leverage factor in this window. By default the value is set to 1.0, or no leverage. The leverage factors for the other funds in your portfolio will be set on the universe allocation window prior to entering Impact Analysis.

5. Create New Universe: This option will allow you to create a new universe comprised of the original portfolio of funds and the investment you are adding. The new allocations to your funds will be shown in parenthesis behind each of the fund names.

6. Convert Universe To Investment: Use this button to quickly create a new investment comprised of your original funds and the addition of your new fund. **Note:** To view your new fund, click the **Home** button located on the PerTrac menu bar. When the **Home** window opens, click the **Load Master Universe** button located on the left side of the window.

7. Left Stat - Right Stat: Below the **Investment** window you will find **Left Stat** and **Right Stat** selection windows. Click the down arrows to select your two statistics. The **Left Stat** will populate the three charts on the left (Portfolio with Investment, Portfolio, Differential), the **Right Stat** will populate the three charts on the right (Portfolio with Investment, Portfolio, Differential).

8. Rolling Periods: This option allows you to enter the rolling periods over which the correlation statistics will be calculated.

9. Show Last Periods: This option with set the scale on the X-axis.

10. Start Date-End Date: These windows contain the date range of your analysis. The start date shown will be the common date range between the universe being analyzed, the selected **Investment** and the selected **Benchmark.** For example, if your universe, Investment and Benchmark have a common start date of Jan-1990, that will be the default start date. If you then select a new **Investment** or **Benchmark** with a start date later than the original common start date, the impact analysis start date will automatically change to reflect the new common start date.

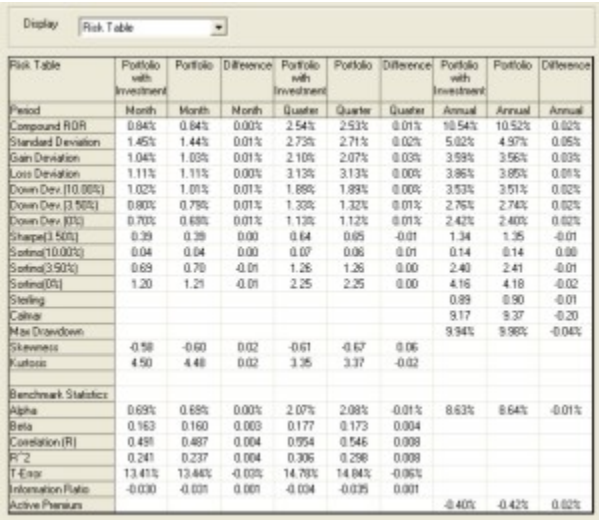
Note: The start date will only change when you select an Investment or Benchmark requiring a new common start date. You can not manually change the start date. You can, however, change the end date.

Note: Remember the impact analysis feature is designed to analyze the affects of adding an investment to your existing portfolio or universe. Your initial universe will be open in the universe allocation window. Your funds will have allocations either manually entered, or equally weighted if you don't enter your allocations. **If you enter different allocations for each of your funds, they will be proportionately reallocated (based on the existing weights) when the new investment is added to the mix.** If the allocations were equally weighted, they will remain equally weighted when the new fund is added through **Impact Analysis**. On the universe allocation window you also have the option to re-balance your portfolio, **Never, Monthly Quarterly or Annually**. These options will also be taken into account when you add a new investment to your portfolio through **Impact Analysis.**

11. Refresh Charts: Click the Refresh Charts button when you change any of the following options: **Rolling Periods, Show Last Periods**, or **End Date**. If you change any of the other options (Upper Stat, Lower Stat, Min, Max, Display Investment Labels) the charts will update automatically.

Risk Charts, Omega Chart and Export Charts

The **Risk Charts** option contains a table and three chart options displaying the before, after and differential statistics for the new portfolio which includes the investment you have added to the mix, and the original portfolio. The **Risk Chart's** four display options: **Risk Table, Statistics Chart - Month, Statistics Chart - Quarter, Statistics Chart - Annual.**

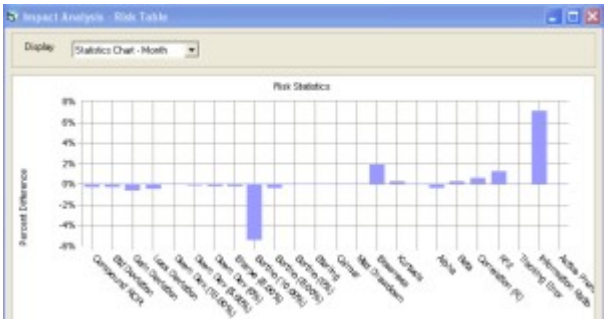

Display: Risk Table

Risk Table	Portfolio with Investment	Portfolio	Difference	Portfolio with Investment	Portfolio	Difference	Portfolio with Investment	Portfolio	Difference
Period	Month	Month	Month	Quarter	Quarter	Quarter	Annual	Annual	Annual
Compound ROR	0.84%	0.84%	0.00%	2.54%	2.53%	0.01%	10.54%	10.52%	0.02%
Standard Deviation	1.45%	1.44%	0.01%	2.73%	2.71%	0.02%	5.02%	4.97%	0.05%
Gain Deviation	1.04%	1.03%	0.01%	2.10%	2.07%	0.03%	3.59%	3.56%	0.03%
Loss Deviation	1.11%	1.11%	0.00%	3.13%	3.13%	0.00%	3.86%	3.85%	0.01%
Down Dev.(10.00%)	1.02%	1.01%	0.01%	1.88%	1.88%	0.00%	3.53%	3.51%	0.02%
Down Dev.(3.50%)	0.80%	0.79%	0.01%	1.33%	1.32%	0.01%	2.76%	2.74%	0.02%
Down Dev.(0%)	0.70%	0.69%	0.01%	1.13%	1.12%	0.01%	2.42%	2.40%	0.02%
Sharpe(3.50%)	0.39	0.39	0.00	0.64	0.65	-0.01	1.34	1.35	-0.01
Sortino(10.00%)	0.04	0.04	0.00	0.07	0.06	0.01	0.14	0.14	0.00
Sortino(3.50%)	0.69	0.70	-0.01	1.26	1.26	0.00	2.40	2.41	-0.01
Sortino(0%)	1.20	1.21	-0.01	2.25	2.25	0.00	4.16	4.18	-0.02
Sterling							0.89	0.90	-0.01
Calmar							9.17	9.37	-0.20
Max Drawdown							9.94%	9.98%	-0.04%
Skewness	-0.58	-0.60	0.02	-0.61	-0.67	0.06			
Kurtosis	4.50	4.48	0.02	3.35	3.37	-0.02			
Benchmark Statistics									
Alpha	0.69%	0.69%	0.00%	2.07%	2.08%	-0.01%	8.63%	8.64%	-0.01%
Beta	0.163	0.160	0.003	0.177	0.173	0.004			
Correlation (R)	0.491	0.487	0.004	0.554	0.546	0.008			
R^2	0.241	0.237	0.004	0.306	0.298	0.008			
T-Error	13.41%	13.44%	-0.03%	14.78%	14.84%	-0.06%			
Information Ratio	-0.030	-0.031	0.001	-0.034	-0.035	0.001			
Active Premium							-0.40%	-0.42%	0.02%

1. Risk Table:

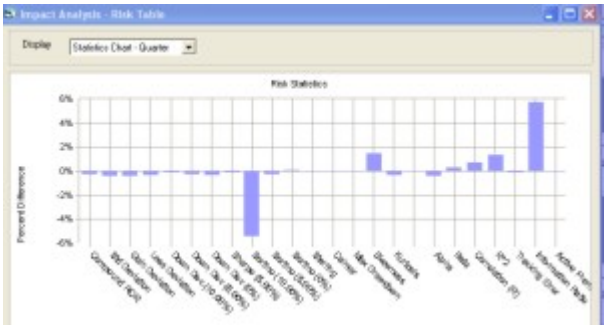
The table includes performance, risk and correlation statistics**.** The statistics are calculated on a Month, Quarter and Annual basis. There are three columns of data for each period: Portfolio with Investment, Portfolio (original), and Difference.

2. Statistics Chart - Month



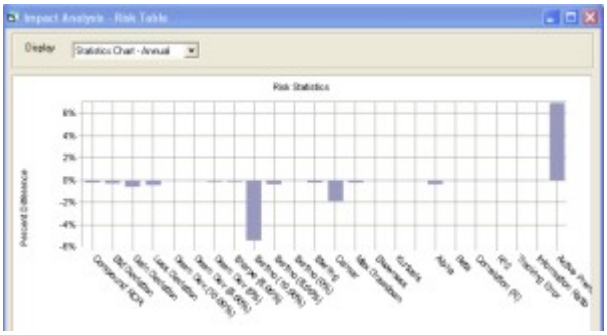
The **Statistics Chart - Month** represents the percent change for each measure between the new portfolio and the original portfolio on a monthly basis.

3. Statistics Chart - Quarter



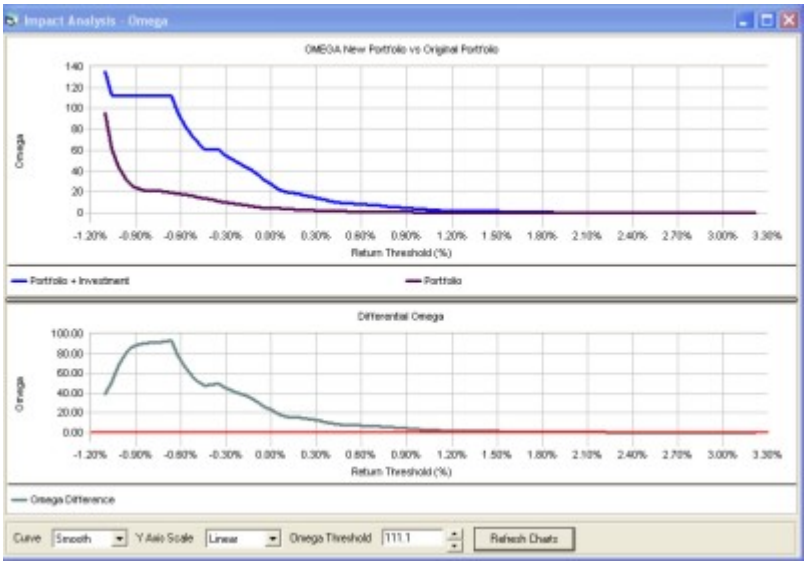
The **Statistics Chart - Quarter** represents the percent change for each measure between the new portfolio and the original portfolio on a quarterly basis.

4. Statistics Chart - Annual



The **Statistics Chart - Annual** represents the percent change for each measure between the new portfolio and the original portfolio on an annual basis.

Omega Chart



1. The upper Omega chart: This chart will show the Omega ratios for the both the new portfolio and the original portfolio at numerous return thresholds. The **Omega** ratio can be seen on the Y-axis, the **Returns Threshold** on the X-axis.

2. The lower Omega chart: This chart will show the differential between the two portfolios.

3. Chart Settings: Below the lower chart are additional chart settings:

Curve - This will set the shape of the lines to either **Smooth** or **Discrete**.

Y-Axis Scale - This will allow you to set the Y-Axis scale to **Linear** or **Logarithmic**.

Omega Threshold - This will set the Y-Axis scale range.

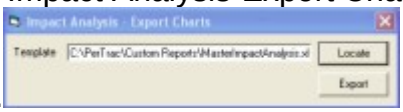
Refresh Charts - Click this to reset the charts once changes to the options above have made.

Export Charts

The **Export Charts** option is an impact analysis custom report generator. Similar to PerTrac Publisher, and the report generators in the Efficient Frontier Optimizer, Linear Optimizer and the Wealth Planner, Export Charts will export the impact analysis data to an Excel spreadsheet. You can then create your own custom impact analysis report template(s) or use a pre-built template. The following steps will walk you through exporting the data.

1. Click **Export Charts** on the right hand side of the impact analysis window.

2. The Impact Analysis-Export Charts widow opens.



3. Click **Locate.** The file selection window will open. The default folder, C:\PerTrac\Custom Reports, contains the master template files for all PerTrac modules. Select the file: "MasterImpactAnalysis.xls" if you are creating you template from scratch. There are two pre-built templates "ImpactAnalysisTemplate" and "ImpactAnalysisTemplate2" also available.

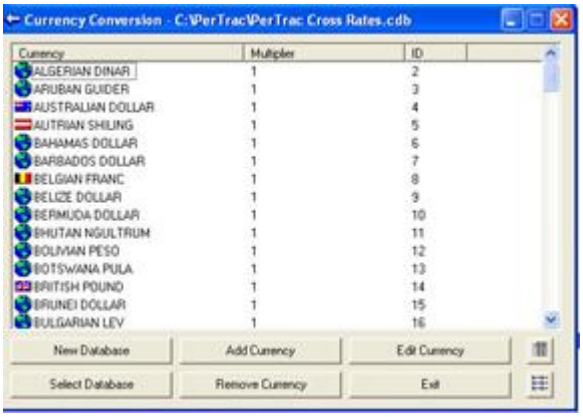
4. Click **Export** to export the data to Excel.

2.07 - Currency Conversion

The **Currency Conversion** tool allows you to convert investment returns from one currency to another. Currency conversion can be performed on a single fund or a universe of funds.

Single Fund Currency Conversion

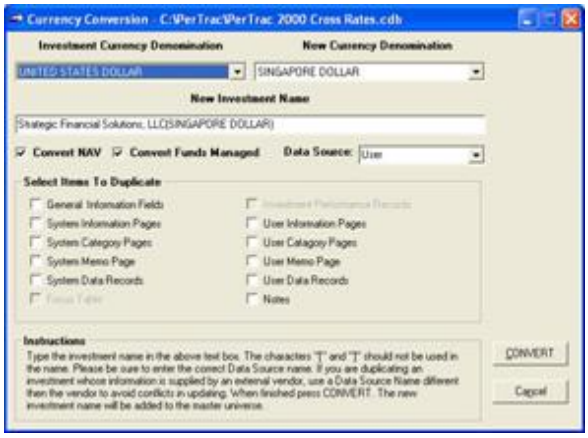
Select the investment you wish to convert, then, from the **Tools** menu, select **Currency Conversion**. There are three options: **Convert Investment to New Currency, Convert Universe to New Currency and Edit Cross Rate Database.** Prior to converting the investment or universe to a new currency the **Cross Rate Database** must be updated.



1. The Cross Rate Database can be edited by selecting **Edit Cross Rate Database** from the **Currency Conversion** section of the **Tools** menu. Click the **Select Database** button on the lower left hand side of the window. When the file selection window appears, select the file "PerTracCrossRates.cdb" and click **Open**. A list of currencies will now be listed in the window. You can now **Add, Remove,** or **Edit** Currencies.

NOTE: New currency rates must be entered each month. The currencies that come pre-loaded have not been updated since September, 1999. However, we now upated the G7 currency rates, which can be updated monthly from the **Utilities/Documentation** link on our Training & Support (http://pertrac.com) site. Each month you will **Save** the new "PerTracCrossRates.cdb" file to your PerTrac main folder.

2. Once the **Currency Cross Rate Database** has been updated, click the **Convert Investment to New Currency** option. Select the currencies of both the current investment and the new investment. The new investment name is listed under the **New Investment Name** label.

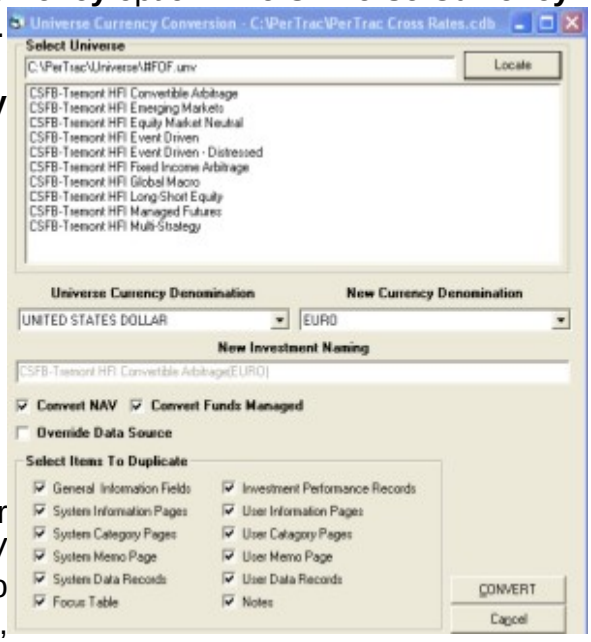


3. Select a Data Source from the drop down list (typically the data source will be "User")
4. Optional conversion check boxes are available to convert NAV and Funds Managed.
5. Other record items can be duplicated by checking the corresponding boxes.
6. Once all the settings have been made, click the **Convert** button.

Universe Currency Conversion

From the **Tools** menu, select **Currency Conversion**. Then select **Convert Universe to New Currency.** Prior to converting the investment or universe to a new currency the **Cross Rate Database** must be updated. See **Note** above.

1. Once the **Currency Cross Rate Database** has been updated, click the **Convert Universe to New Currency** option. The **Universe Currency Conversion** window appears.



2 When the **Universe Currency Conversion** window appears click the **Locate** button to open the universe to be converted.

3. Select the existing **Universe Currency Denomination** to be converted and then select the **New Currency Denomination** to be converted to.
4. Elect to **Convert NAV** (if your fund data sheet contains NAV vaules that you would like to convert to the new currency), **Convert Funds Managed** (if you want this data also converted to the new currency), or to **Override Data Source**.
5. Select the qualitative information to be duplicated under the **Select Items To Duplicate** section.
6. Once all the settings have been made, click the **Convert** button.
7. The new investments have been added to your database. The default name for the new funds will be the old name with the new currency in parenthesis behind the name.

Currency Conversion

2.07 - Currency Conversion

The **Currency Conversion** tool allows you to convert investment returns from one currency to another. Currency conversion can be performed on a single fund or a universe of funds.

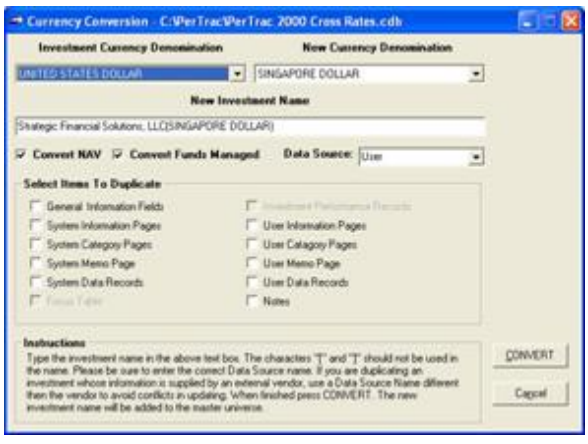
Single Fund Currency Conversion

Select the investment you wish to convert, then, from the **Tools** menu, select **Currency Conversion**. There are three options: **Convert Investment to New Currency, Convert Universe to New Currency and Edit Cross Rate Database.** Prior to converting the investment or universe to a new currency the **Cross Rate Database** must be updated.

1. The Cross Rate Database can be edited by selecting **Edit Cross Rate Database** from the **Currency Conversion** section of the **Tools** menu. Click the **Select Database** button on the lower left hand side of the window. When the file selection window appears, select the file “PerTracCrossRates.cdb” and click **Open**. A list of currencies will now be listed in the window. You can now **Add, Remove,** or **Edit** Currencies.

NOTE: New currency rates must be entered each month. The currencies that come pre-loaded have not been updated since September, 1999. However, we now upated the G7 currency rates, which can be updated monthly from the **Utilities/Documentation** link on our Training & Support (http://pertrac.com) site. Each month you will **Save** the new "PerTracCrossRates.cdb" file to your PerTrac main folder.

2. Once the **Currency Cross Rate Database** has been updated, click the **Convert Investment to New Currency** option. Select the currencies of both the current investment and the new investment. The new



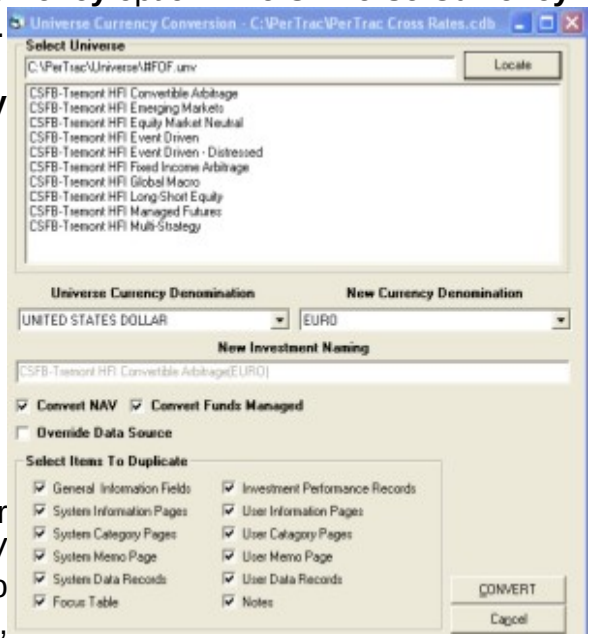
investment name is listed under the **New Investment Name** label.

3. Select a Data Source from the drop down list (typically the data source will be “User”)
4. Optional conversion check boxes are available to convert NAV and Funds Managed.
5. Other record items can be duplicated by checking the corresponding boxes.
6. Once all the settings have been made, click the **Convert** button.

Universe Currency Conversion

From the **Tools** menu, select **Currency Conversion**. Then select **Convert Universe to New Currency.** Prior to converting the investment or universe to a new currency the **Cross Rate Database** must be updated. See **Note** above.

1. Once the **Currency Cross Rate Database** has been updated, click the **Convert Universe to New Currency** option. The **Universe Currency Conversion** window appears.



2 When the **Universe Currency Conversion** window appears click the **Locate** button to open the universe to be converted.

3. Select the existing **Universe Currency Denomination** to be converted and then select the **New Currency Denomination** to be converted to.
4. Elect to **Convert NAV** (if your fund data sheet contains NAV vaules that you would like to convert to the new currency), **Convert Funds Managed** (if you want this data also converted to the new currency), or to **Override Data Source**.
5. Select the qualitative information to be duplicated under the **Select Items To Duplicate** section.
6. Once all the settings have been made, click the **Convert** button.
7. The new investments have been added to your database. The default name for the new funds will be the old name with the new currency in parenthesis behind the name.

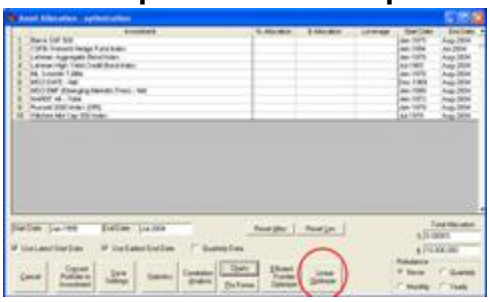
Optimization & Simulation

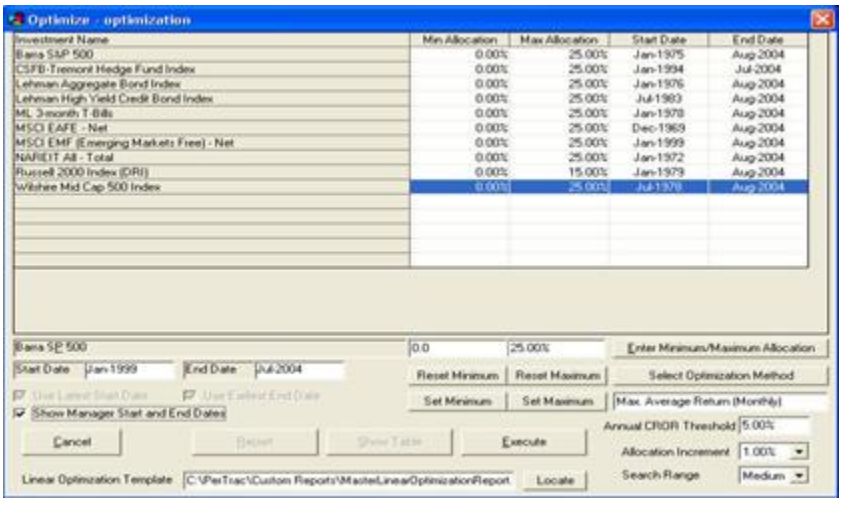
3.10 - Linear Optimization - View the online tutorial!

PerTrac includes both a Linear Optimizer and a Markowitz Efficient Frontier Optimizer. These optimizers allow you to define criteria for optimizing a portfolio. The Linear Optimizer displays optimal portfolio allocations, ranked from best to worst targeting a specific statistic. The Efficient Frontier Optimizer displays an Efficient Frontier Plot, along with a corresponding Risk Table and Allocation Table, which lead to a Markowitz risk/return optimization solution.

Setting up a Linear Optimization

Clicking the **Linear Optimizer** button from the **Asset Allocation Window** opens the **Linear Optimization Setup Window**.





The top left of the window contains a list of investment, as well as **Min Allocation** and **Max Allocation** columns that allow you to select the minimum and maximum allocations for each investment. The **Start Date** and **End Date** columns, which are initially blank, can be activated by checking the **Show Manager Start and End Dates** box just above the **Cancel** button at the lower left of the window. These dates represent all periods for which the current investment contain data. The Portfolio **Start Date** and **End Date** for the entire portfolio are displayed in the lower left corner and can be altered only by returning to the **Asset Allocation Window**.

Setting Minimum and Maximum Allocations

The minimum and maximum allocation percentages are entered using the **Investment Update Bar** at the bottom of the window.

1. Highlight the row in the **Investment Table** for the investment to be updated. You will notice the name of the selected investment appear in the **Current Investment** box just above the portfolio **Start Date**.
2. To the right of the each investment, enter the minimum and maximum allocations desired (20%, for example, can be entered as .2 or 20%).
3. Click **Enter Minimum/Maximum Allocation**.
4. Repeat the steps above for each investment in the current universe.
5. Clicking either the **Reset Minimum** button or the **Reset Maximum** button will reset all values in the relevant column to 0% or 100%, respectively.
6. If you want to enter the same minimum or maximum percentage allocation for all investments simultaneously, enter the percentage in the appropriate box and click the **Set Minimum** or **Set Maximum** button located just below the reset buttons.

Selecting the Optimization Method

The various portfolio allocations will be ranked according to the optimization method you select in the **Optimization Method Window**.

1. Click the **Select Optimization Method** button, located in the lower right of the window.
2. From the **Optimization Method Window**, click the button next to the method with which you wish to optimize the portfolio.
3. Select a time period for which the selected statistic will be optimized.
4. Click **OK**.

The dialog box will close and you will return to the **Linear Optimization Setup Window**.

TIP: that the optimization method you selected is now displayed in the box directly beneath the **Select Optimization Method** button.

Specifying a Compound Rate of Return Threshold

You can also specify a minimum threshold for the annualized rate of return. For example, if you define the threshold as 5%, the optimization solution will ignore results that do not produce a historical annualized return of at least 5%.

Specifying the Allocation Increment

The optimizer requires you to specify an increment for allocation. This is the increment at which new optimization solutions are considered. For example, setting the allocation increment to 5% means that each allocation value that is

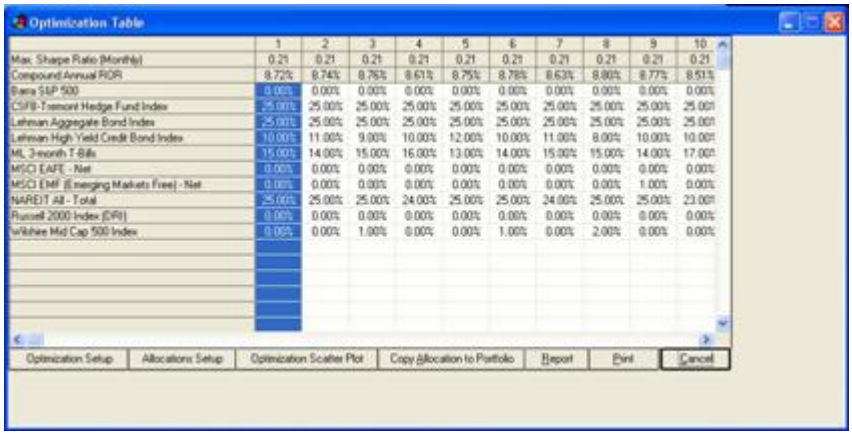
divisible by 5 will be considered for each investment. To select the allocation increment, select a value from the pull down menu.

NOTE – Make sure the allocation increments are divisible either by the minimum or maximum allocation or you may encounter an error.

Specifying the Search Range

In the bottom right hand corner, you have three options for conducting your search; low, medium and high. Each method samples the available data and generates allocations based on the statistic for which you optimized. Selecting "Low" produces results faster but gives a more general picture of the possible allocations, while selecting "High" will take more time but will generate more results in a tighter cluster. All three generate sample portfolios and do not display every possible solution.

Linear Optimization Results



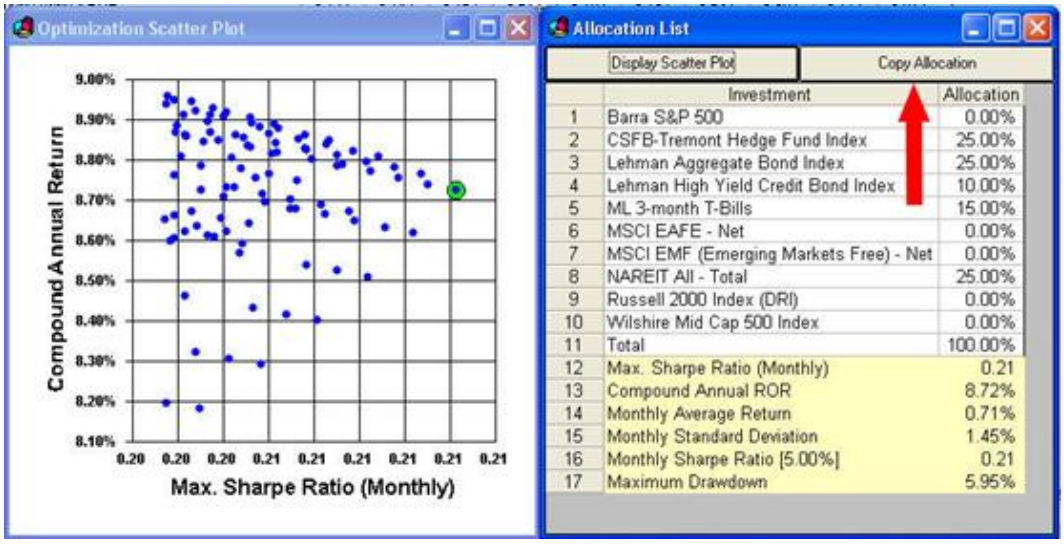
Once you have set up the Linear Optimization, click **Execute** to begin the calculation process. When PerTrac has finished optimizing, a confirmation will be displayed that states "optimization complete". Click **OK**. The results are displayed in the **Optimization Table Window**.

This **Optimization Table Window** displays the top 100 allocations for the defined optimization, ranked from left to right according to the optimization method you selected. The top row of the table shows the value of the statistic for which the optimization was calculated. The second row shows the Compound Annual Rate of Return (ROR) that was generated by that particular allocation. Subsequent rows list the resulting percent allocated to each investment. You can print this table by clicking **Print** at the bottom right of this window.

Clicking the **Allocations Setup** button at the bottom of this window will bring you back to the **Asset Allocation Window**, while the **Optimization Setup** button will bring you back to the **Linear Optimization Setup Window**. Also, while back in the **Linear Optimization Setup Window**, clicking **Show Table** allows you to return to the **Optimization Table Window**.

Optimization Scatter Plot

Clicking the **Optimization Scatter Plot** button at the bottom of the **Optimization Table** opens the **Optimization Scatter Plot** as well as its corresponding **Allocation List Box**. The scatter plot is a graph that plots the Compound Annual Rate of Return on the y-axis and the statistic by which the allocation is optimized on the x-axis. Like all other PerTrac charts and graphs, the **Optimization Scatter Plot** can be edited, saved, or printed as described in previous sections. For more information, see **Editing a Chart** under **Investment Charts**.



Copying Allocations to a Portfolio

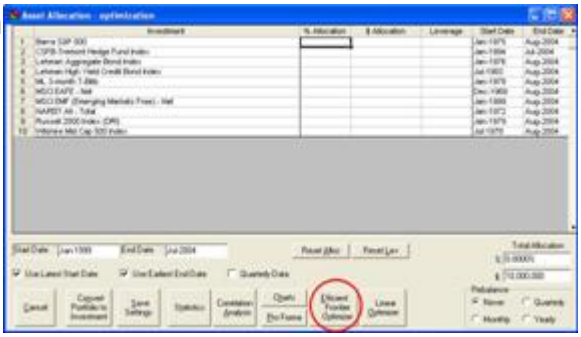
Once you have found a suitable allocation distribution, you can copy it directly to your current portfolio.

1. Highlight the column within the table containing the desired allocation or select the desired dot in the **Scatter Plot.** When you select a point on the scatter plot, the **Allocation List Box** will update to display the allocation percentages and statistics for that point.
2. Click **Copy Allocation to Portfolio**. The **Asset Allocation Window** will appear with the specified portfolio allocations.

The **Allocation List Box** also contains a **Copy Allocation Button**, which you can use to assign the current allocation to your portfolio, essentially creating a new investment with the selected allocations. Please refer to **Converting a Portfolio to an Investment** and **Saving an Asset Allocation** in Chapter 8 – Asset Allocation.

3.11 - Efficient Frontier Optimization - View the online tutorials: (1) Efficient Frontier New Features; (2) Efficient Frontier Overview; (3) Efficient Frontier Setup

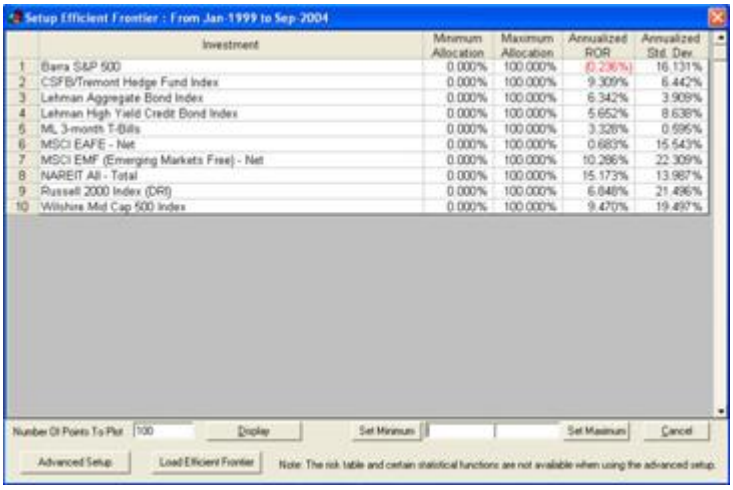
Setting up an Efficient Frontier Optimization



Clicking the **Efficient Frontier** button from the **Asset Allocation Window** opens the **Efficient Frontier Setup Window**, where you can create a powerful Markowitz quadratic optimizer that displays a traditional efficient frontier curve and allows for extensive analysis of various investment portfolios. This analysis uses three statistics to optimize a portfolio, annualized return, standard deviation and correlation of the inputs.

TIP – PerTrac allows you to enter your own assumptions for return, standard deviation and correlation if you desire. Please see the section on **Advanced Setup** below.

The top of the window contains a table with the name of each investment in the current universe, along with columns titled **Minimum Allocation**, **Maximum Allocation**, **Annualized ROR**, and **Annualized Std. Dev.**


Setup Efficient Frontier : From Jan-1999 to Sep-2004
Investment
Minimum Allocation
Maximum Allocation
Annualized ROR
Annualized Std. Dev.
1 Barra S&P 500 0.000% 100.000% (0.236%) 16.131%
2 CSFB/Tremont Hedge Fund Index 0.000% 100.000% 9.309% 6.442%
3 Lehman Aggregate Bond Index 0.000% 100.000% 6.342% 3.909%
4 Lehman High Yield Credit Bond Index 0.000% 100.000% 5.652% 8.638%
5 ML 3-month T-Bills 0.000% 100.000% 3.328% 0.595%
6 MSCI EAFE - Net 0.000% 100.000% 0.683% 15.543%
7 MSCI EMF (Emerging Markets Free) - Net 0.000% 100.000% 10.286% 22.309%
8 NAREIT All - Total 0.000% 100.000% 15.173% 13.987%
9 Russell 2000 Index (DR) 0.000% 100.000% 6.848% 21.496%
10 Wilshire Mid Cap 500 Index 0.000% 100.000% 9.470% 19.497%
Number Of Points To Plot
100
Display
Set Minimum
Set Maximum
Cancel
Advanced Setup
Load Efficient Frontier
Note: The risk table and certain statistical functions are not available when using the advanced setup.

Setting Minimum and Maximum Allocations

You can set minimum and maximum allocations by clicking on the relevant cell and entering a percent value (10%, for example, would be entered as .10 or 10%). To use a common value for each investment, make an entry in either the **Set Minimum** box or the **Set Maximum** box and click either **Set Minimum** button or the **Set Maximum** button.

Altering Rate of Return or Standard Deviation

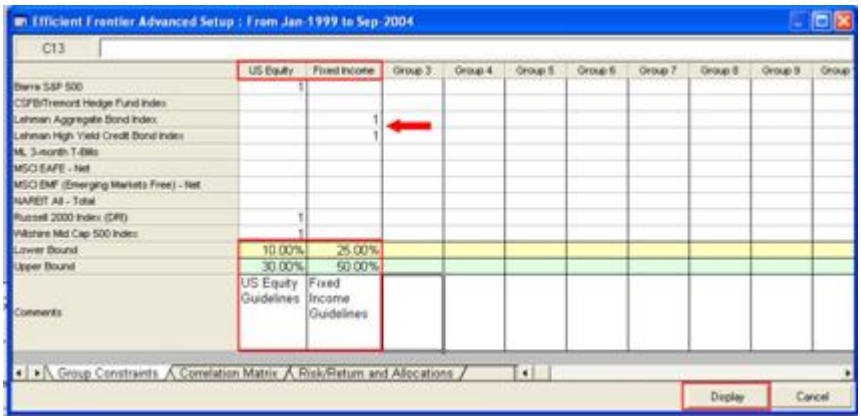
You can enter your own assumptions in the **Annualized ROR** column or the **Annualized Std. Dev.** column by clicking on the cell and entering the value, as above.

Entering the Number of Points to Plot

You can choose to plot between 0 and 1000 points, each of which represents a different allocation on the efficient frontier.

Advanced Setup

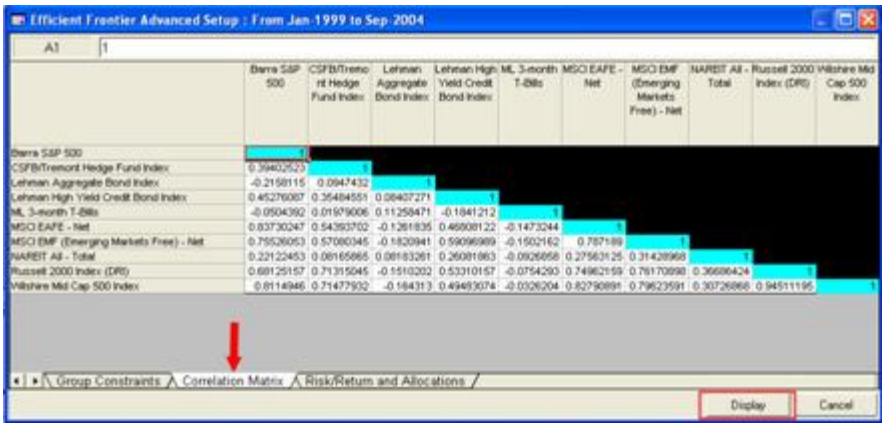
Clicking the **Advanced Setup** button on lower left of the **Efficient Frontier Setup Window** will allow you to alter the **Group Constraints, Correlation Matrix, Risk/Return**, and individual investment constraints tables. The **Advanced Setup Window** contains a tab for each of these tables.



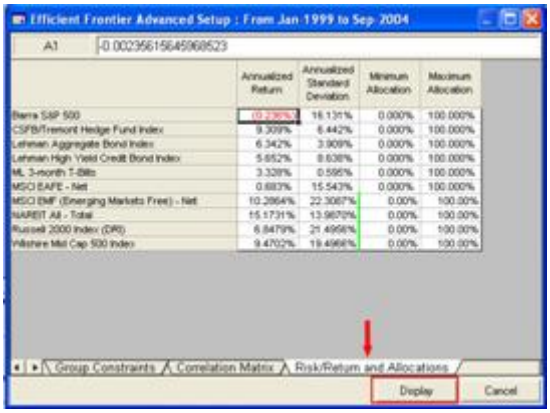
To define a Group Constraint, start with the **Group 1** (U.S. Equity in the exhibit below) column and place the number 1 to the right of each investment you would like to include in this group (clicking on the cells will toggle the 1 on and off). Next, use the **Upper Bound** and **Lower Bound** rows to set the desired constraints for this group and enter any important information in the **Comments** row. The column headings may be changed by clicking on the column label. Once your groups have been set click the **Display** button to create the efficient frontier chart.

TIP: You will notice that there is no Save button in this window. The Save option is located on the efficient frontier chart that is created when you click the **Display** button from the **Advanced Setup Window**. To retain the changes you have entered on the **Group Constraints** tab, click the Save button on the efficient frontier chart immediately after the chart appears.

The **Correlation Matrix** tab can also be used to customize the Efficient Frontier Setup by replacing the historical correlations with your own assumptions.



The **Risk/Return and Allocations** can also be used to customize the Efficient Frontier Setup by replacing the historical returns with your own assumptions.



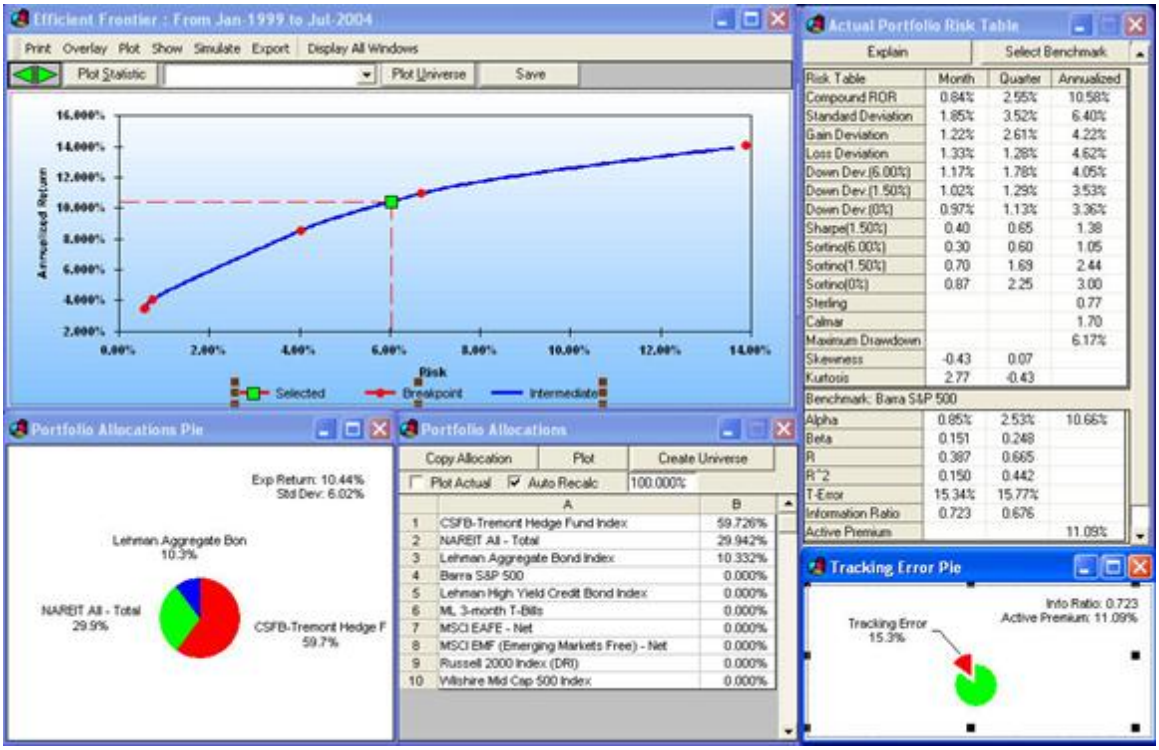
TIP: You will notice that there is no Save button in these windows. The Save option is located on the efficient frontier chart created when you click **Display** from the advanced setup window. To retain the changes you have entered in the **Correlation Matrix** or **Risk/Return and Allocations** tabs click **Save** on the efficient frontier chart immediately after the chart appears.

NOTE: If you change the mean or standard deviation for any input in the analysis, the correlation table is not changed. You must manually adjust the correlations. Additionally, if you change an input's return, PerTrac will ask you whether you want a *geometric* or *average* mean which will redraw the historical distribution based on your inputs. Any changes to the underlying data ***will*** flow through to the **Simulation** module.

When you are finised with the **Advanced Setup Window**, click **Display** to view the **Efficient Frontier Plot**.

Efficient Frontier Optimization Results

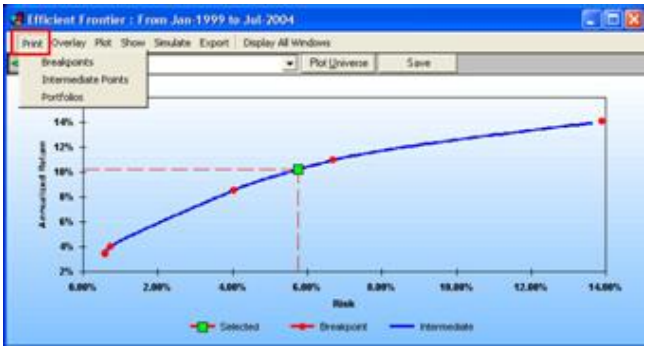
Clicking **Display** from the **Efficient Frontier Setup Window** (or **Plot** from the **Advanced Setup Window**) will display your results. A variety of windows can also be displayed by clicking on the efficient frontier line; **Efficient Frontier Plot**, **Actual Portfolio Risk Table**, **Portfolio Allocation Pie**, **Portfolio Allocation Table** and **Tracking Error Pie**. Each of the displays can be turned on or off using the drop down box labeled **Show** on the **Efficient Frontier Plot toolbar**. The display below shows all the available exhibits.


Efficient Frontier : From Jan-1999 to Jul-2004
Print Overlay Plot Show Simulate Export Display All Windows
Plot Statistic
Plot Universe
Save
Annualized Return
Risk
Selected
Breakpoint
Intermediate
Actual Portfolio Risk Table
Explain
Select Benchmark
Risk Table | Month | Quarter | Annualized
Compound ROR | 0.84% | 2.55% | 10.58%
Standard Deviation | 1.85% | 3.52% | 6.40%
Gain Deviation | 1.22% | 2.61% | 4.22%
Loss Deviation | 1.33% | 1.28% | 4.62%
Down Dev (6.00%) | 1.17% | 1.78% | 4.05%
Down Dev (1.50%) | 1.02% | 1.29% | 3.53%
Down Dev (0%) | 0.97% | 1.13% | 3.36%
Sharpe(1.50%) | 0.40 | 0.65 | 1.38
Sortino(6.00%) | 0.30 | 0.60 | 1.05
Sortino(1.50%) | 0.70 | 1.69 | 2.44
Sortino(0%) | 0.87 | 2.25 | 3.00
Sterling | | | 0.77
Calmar | | | 1.70
Maximum Drawdown | | | 6.17%
Skewness | -0.43 | 0.07 |
Kurtosis | 2.77 | -0.43 |
Benchmark: Barra S&P 500
Alpha | 0.85% | 2.53% | 10.66%
Beta | 0.151 | 0.248 |
R | 0.387 | 0.665 |
R^2 | 0.150 | 0.442 |
T-Error | 15.34% | 15.77% |
Information Ratio | 0.723 | 0.676 |
Active Premium | | | 11.09%
Portfolio Allocations Pie
Exp Return: 10.44%
Std Dev: 6.02%
Lehman Aggregate Bon 10.3%
NAREIT All - Total 29.9%
CSFB-Tremont Hedge F 59.7%
Portfolio Allocations
Copy Allocation
Plot
Create Universe
Plot Actual
Auto Recalc
100.000%
A | B
1 CSFB-Tremont Hedge Fund Index 59.726%
2 NAREIT All - Total 29.942%
3 Lehman Aggregate Bond Index 10.332%
4 Barra S&P 500 0.000%
5 Lehman High Yield Credit Bond Index 0.000%
6 ML 3-month T-Bills 0.000%
7 MSCI EAFE - Net 0.000%
8 MSCI EMF (Emerging Markets Free) - Net 0.000%
9 Russell 2000 Index (DRI) 0.000%
10 Wilshire Mid Cap 500 Index 0.000%
Tracking Error Pie
Tracking Error 15.3%
Info Ratio: 0.723
Active Premium: 11.09%

Efficient Frontier Plot – Displays annualized return on the y-axis and risk (as measured by standard deviation) on the x-axis. The blue line connects all allocations on the frontier with **intermediate points** (the default number of portfolios is set to 100 with 1a maximum of 1,000) while the red dots represent the breakpoints, where investments either rise above or fall to the minimum allocation amount. A **breakpoint** is essentially where the shape or slope of the curve changes.

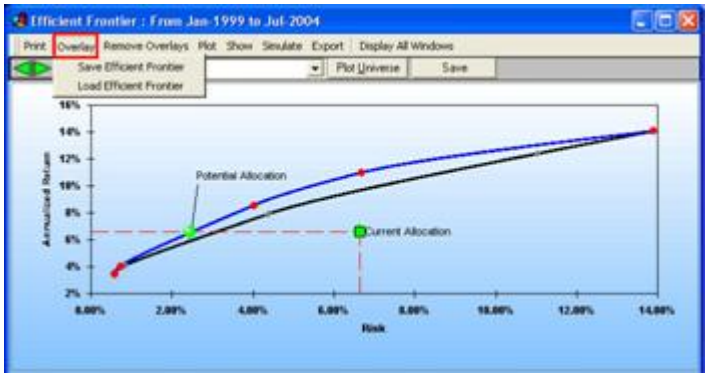
Print Menu

The allocations of the breakpoints and the intermediate points can be



printed by selecting **Breakpoints** or **Intermediate Points** from the **Print** menu. Selecting **Portfolios** from the **Print** menu allows you to print the custom allocations you may have added, which do not necessarily lie on the efficient frontier line. Selecting any of these options will create a table in spreadsheet format that you can print, format, edit, or save, depending on your needs.

Overlay Menu



Selecting **Save Efficient Frontier** from the **Overlay** menu allows you to save the current plot as an ".efo" file (Efficient Frontier Overlay file), which can be superimposed on a later plot by selecting **Load Efficient Frontier** from the **Overlay** menu. This option is useful to illustrate how the efficient frontier line would change by adding or removing investments from the universe of assets being optimized.

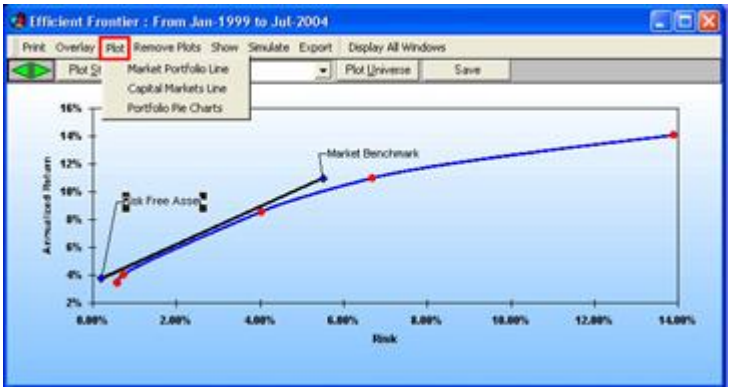
NOTE: When you load a previously saved efficient frontier, black line represents the saved efficient frontier and is not active. The blue line is the current efficient frontier including all asset inputs and is the active line.

Remove Overlays

This option will remove any overlays that have been applied to the **Efficient Frontier Plot.** This option is only visible after an overlay has been applied.

Plot

Selecting **Market Portfolio Line** from the **Plot** menu will prompt you to enter both an Annualized Return and an Annualized Standard Deviation for the low risk asset. Be sure to enter the appropriate Risk-Free return and standard deviation for the period being analyzed. Once entered, the Market Portfolio Line will appear on your chart.



Selecting **Capital Markets Line** from the **Plot** menu opens up a small form where you can enter the Annualized Return and Annualized Standard Deviation for both the Risk Free Asset and the Capital Markets Benchmark, as well as assign a name for

each. Click **OK** when you have entered these figures to display the Capital Markets Line.

Your custom allocations can also be presented in pie chart format by selecting **Portfolio Pie Charts** from the **Plot** menu. Occasionally, the portfolio label text length will impede the size of the chart itself. Using the **Chart Options** menu to reduce the maximum number of characters allowed for pie chart labels can prevent this. As with all charts in PerTrac, complete chart formatting is available by selecting **Chart Designer** from the right-click menu.

Remove Plots

This option is available only if you have plotted supplemental statistics on the Efficient Frontier Plot.

Show Menu

Efficient Frontier Plot items using the options on the **Show** drop down menu. **Show Grid Lines**, **Show Tick Marks**. **Show Point Selected Marker, Show Breakpoints** and **Show Legend** are all available displays for the graph. Additionally, supplementary tables and pie charts are available. These are labeled **Show Allocation Pie Chart**, **Show Tracking Error Pie Chart** and **Show Risk Table**.

Simulate and Export

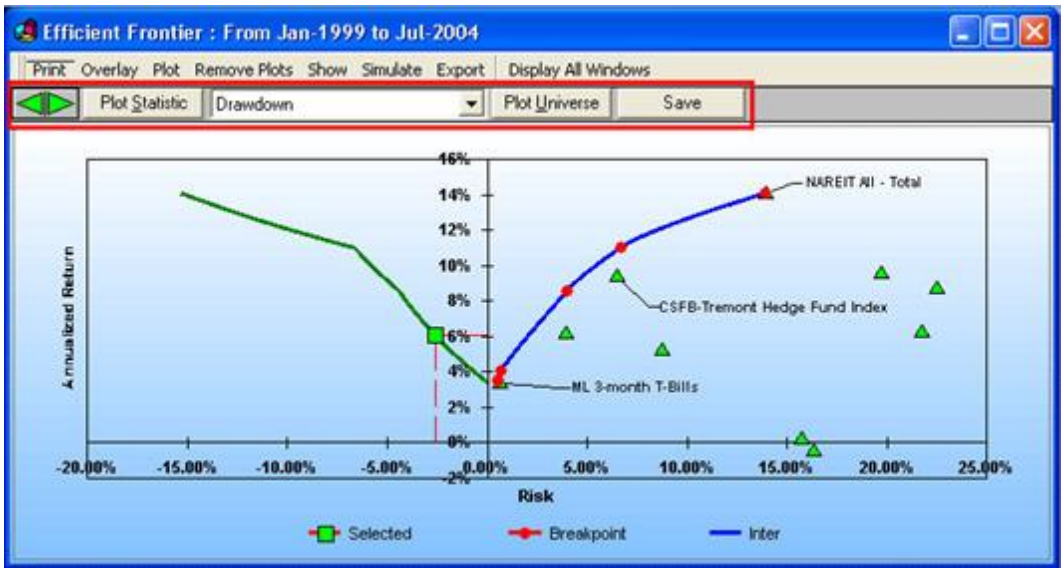
These two options will be discussed later after the Supplementary Tables and Pie Charts are explained.

Display All Windows

If you minimize any of the available windows or tables associated with the **Efficient Frontier Plot**, this button will allow you to display them again in their assigned areas.

Plot Statistic and Plot Universe

PerTrac allows you to add supplementary statistics and displays to the Efficient Frontier Chart. These can be added by selecting the appropriate statistic from the dropdown menu bar in the **Efficient Frontier Plot** and selecting **Plot Statistic**, **Plot Universe** or both.



The graph above shows a combination of available plots. The green line represents drawdown for each portfolio plotted on the efficient frontier (blue line) from January 1999 to July 2004. To add this line, **Drawdown** was selected from the dropdown menu followed by **Plot Statistic**. The green triangles represent each asset's standard deviation and mean return. To show these statistics, **Standard Deviation** was selected from the dropdown menu and then clicking **Plot Universe**. Additionally, any investment's name may be displayed by clicking on any green triangle. The investment names may be mover around with your cursor and displayed with the click of the mouse. The supplemental statistics on the drop down menu can be a useful portfolio planning tool. For example: A high net worth individual or retirement plan policy constraint may require a diversified portfolio mix that has a minimal drawdown. The drawdown statistic can help pinpoint this optimal allocation for you.

TIP – The green arrows to the left of **Plot Statistic** will move you one portfolio up or down on the efficient frontier.

Save

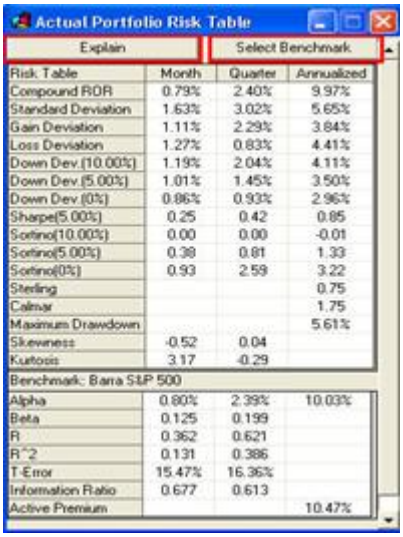
This feature allows you to save your **Efficient Frontier Plot** as a chart with an ".efc" extension. The chart can be reloaded from the **Efficient Frontier Setup** window in the future. As with all charts in PerTrac, complete chart formatting is available by selecting **Chart Designer** from the right-click menu.

Using the Supplementary Tables and Pie Charts

Selecting a allocation on the **Efficient Frontier Plot** marks that point with a green box and opens the **Actual Portfolio Risk Table, Portfolio Allocations**

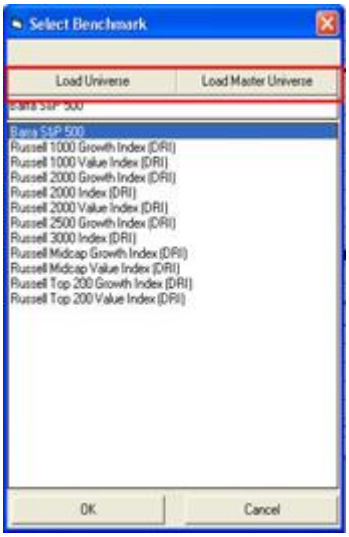
Table, **Portfolio Allocation Pie**, **Portfolio Allocation Table** and **Tracking Error Pie,** all of which you can use to assist your analysis.

Actual Portfolio Risk Table: This table displays statistics associated with the portfolio that you have selected from the efficient frontier. The first time you try to display the efficient frontier chart, a dialog box will open and instruct you to **Select a Benchmark.**


Actual Portfolio Risk Table
Explain
Select Benchmark
Risk Table | Month | Quarter | Annualized
Compound ROR | 0.79% | 2.40% | 9.97%
Standard Deviation | 1.63% | 3.02% | 5.65%
Gain Deviation | 1.11% | 2.29% | 3.84%
Loss Deviation | 1.27% | 0.83% | 4.41%
Down Dev.(10.00%) | 1.19% | 2.04% | 4.11%
Down Dev.(5.00%) | 1.01% | 1.45% | 3.50%
Down Dev.(0%) | 0.86% | 0.93% | 2.96%
Sharpe(5.00%) | 0.25 | 0.42 | 0.85
Sortino(10.00%) | 0.00 | 0.00 | -0.01
Sortino(5.00%) | 0.38 | 0.81 | 1.33
Sortino(0%) | 0.93 | 2.59 | 3.22
Sterling | | | 0.75
Calmar | | | 1.75
Maximum Drawdown | | | 5.61%
Skewness | -0.52 | 0.04 |
Kurtosis | 3.17 | -0.29 |
Benchmark: Barra S&P 500
Alpha | 0.80% | 2.39% | 10.03%
Beta | 0.125 | 0.199 |
R | 0.362 | 0.621 |
R^2 | 0.131 | 0.386 |
T-Error | 15.47% | 16.36% |
Information Ratio | 0.677 | 0.613 |
Active Premium | | | 10.47%

Select Benchmark

You can select a benchmark from a custom universe using the **Load Universe** button, or you may select a benchmark from All.unv with the **Load Master Universe** button. Highlight your preferred benchmark and click **OK**. From then on, all of your future efficient frontier comparison statistics will be measured against the selected benchmark, until you change the benchmark.



Explain

The **Explain** button gives a detailed description of how the Efficient Frontier Plot and the Actual Portfolio Risk Table were generated. All of the statistics displayed within the risk table correspond to the portfolio that is currently highlighted on the Efficient Frontier Plot. These statistics were generated using the asset allocations in the **Portfolio Allocations** table with no rebalancing, for the time period being measured. The Efficient Frontier Plot display (the blue line with risk on the X axis and return on the Y axis) was drawn using the Markowitz Efficient Frontier methodology. (A .pdf with more details on this type of analysis is available upon request).

Portfolio Allocations – This table has multiple functions. Its primary function is to display the investments/assets that comprise the selected portfolio on the **Efficient Frontier Plot**. The investments/assets will be displayed in order from the largest allocation to the

Portfolio Allocations
1 Copy Allocation
2 Plot
3 Create Universe
4 Plot Actual
5 Auto Recalc
100.000%
A | B
1 | CSFB-Tremont Hedge Fund Index | 58.516%
2 | NAREIT All - Total | 29.097%
3 | Lehman Aggregate Bond Index | 12.387%
4 | Barra S&P 500 | 0.000%
5 | Lehman High Yield Credit Bond Index | 0.000%
6 | ML 3-month T-Bills | 0.000%
7 | MSCI EAFE - Net | 0.000%
8 | MSCI EMF (Emerging Markets Free) - Net | 0.000%
9 | Russell 2000 Index (DRI) | 0.000%
10 | Wilshire Mid Cap 500 Index | 0.000%

smallest allocation. Additionally, you can type any allocation that you wish for each of the assets and the resulting portfolio will be displayed. This is an ideal way to type in your current portfolio allocation and display its location on the graph. Please see the section **Auto Recalc** for additional options.

Copy Allocation

Any portfolio selected on the **Efficient Frontier Line** can be converted to a portfolio by pressing the **Copy Allocation** button (marked as 1 in the screen capture above). Once you click the button, the **Asset Allocation** window is launched. Refer to the section **Convert Portfolio to an Investment** for more details.

TIP – It is a good idea to save your allocations as universes, using the **Save Settings** button in the **Asset Allocation** window. This way you can recall/document the original asset allocation.

Plot

If you press the Plot button (marked as 2 in the Portfolio Allocation screenshot), a window will appear prompting you label the point and select a marker for that point. In addition, you can add cross hairs on the marker to draw emphasis to this portfolio. Plotting portfolios is an essential step if you want to test this portfolio using the Simulate button which will launch the **Portfolio Planning and Simulation Tool**. The financial planning simulation module will be covered section 3.13.

Create Universe

If you would like to create a sub universe of the assets that comprise a portfolio on the **Efficient Frontier Plot** you can highlight them and click Create Universe (marked as 3 on the Portfolio Allocations screenshot). This will bring up a new window prompting you to give your new universe a name.

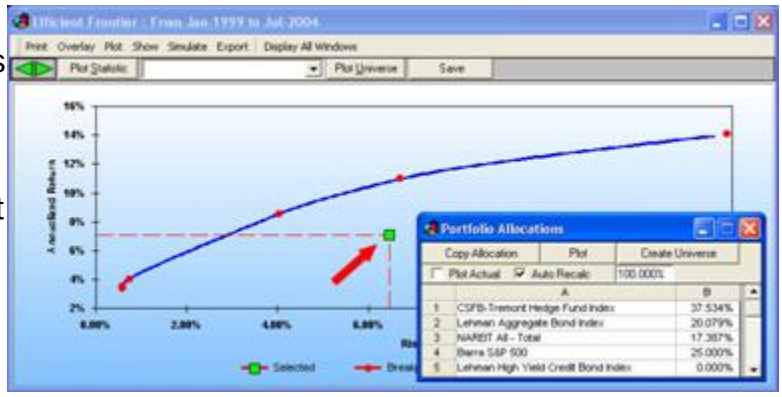
Plot Actual

If you check the **Plot Actual** checkbox (marked number 4 on the Portfolio Allocations screenshot), the portfolio plotted on the **Efficient Frontier Plot** will exactly match the displayed statistics on the actual **Portfolio Risk Table**.

You can also plot custom points that represent portfolio allocations off the **Efficient Frontier Line**. In the **Portfolio Allocations Window**, type the allocations in the appropriate cells and click **Plot**. This will launch the **Select Point Format** window where you can pre-format both the point features and the label text. There is also a **Set Cross Hairs** check box, which can provide special

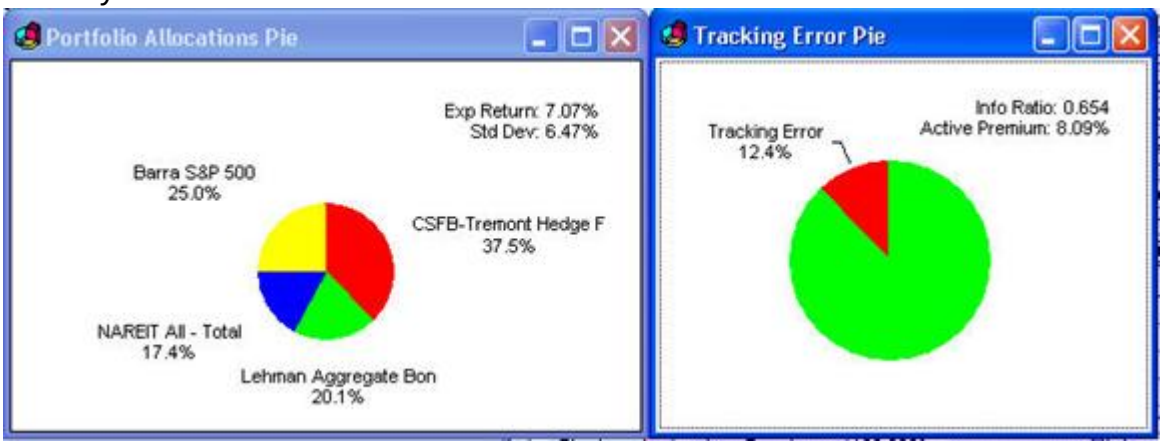
focus to a particular point. Once you have made all the selections, click **OK** to display the point.

Auto Recalc



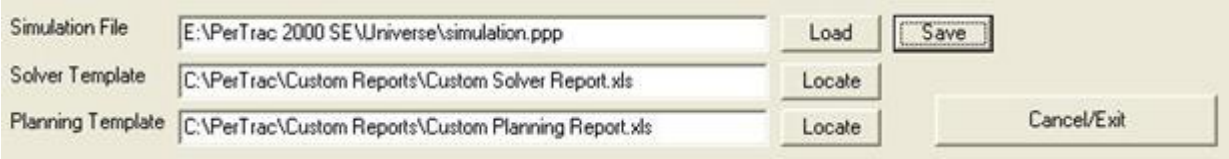
This check box (marked 5 on the Portfolio Allocations screenshot), enables you to type in any allocation for an asset and all other allocated assets will adjust proportionately. In addition, if you have the **Point Selected Marker** displayed, it will show you the new allocation's placement on the **Efficient Frontier Line**. This option is ideal for quickly typing in hypothetical allocations and immediately seeing that portfolio's location on the graph.

Portfolio Allocation and Tracking Error Pies – The first window displays the current portfolio's allocation with annualized return and standard deviation for the selected period. The Tracking Error Pie window displays the current annualized tracking error of the displayed portfolio along with annualized active premium and monthly information ratio.



3.14 - Financial Planner and Simulation Custom Reports

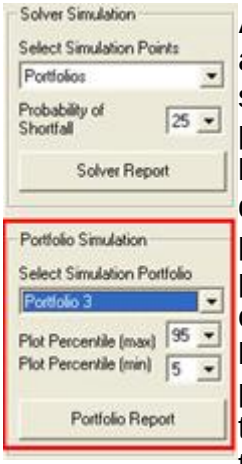
Simulation Templates – Prior to generating either the **Solver** or **Portfolio** reports, you must select an Excel template to exporting your results. PerTrac is pre-loaded with some suggested templates.



Click **Locate** to the right of the Solver Template. This button will launch a window that displays pre-loaded Excel files. Select either the **Custom Solver Report.xls** or the **Master Portfolio Solver Report.xls** file. The Custom template has been pre-built for you while the master template requires you to build your own template, similar to the **PerTrac Publisher Custom** or **Combination** reports. The same instructions apply to the planning templates. **Locate** either the **Custom Planning Report** or the **Master Portfolio Planning Report**. The **Load** and **Save** options available in Simulation File area let you save your simulation setup and/or load it at a later time.

Solver Report – There are two different reports that you can run in the **Portfolio Simulation and Planning** Module. The first report is the **Solver**.

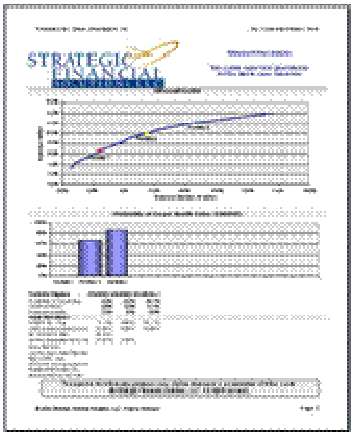
The **Solver Report** allows you to test breakpoints, interval points or portfolios against your assumptions and constraints. If you are testing more than one portfolio, this will give you an indication of which one(s) are more likely to achieve your financial goals. The **Probability of Shortfall** allows you to select a specific percentile in the simulation distribution indicating the probability of a shortfall. PerTrac gives you the option of targeting anywhere from the 95th to the 5th percentile. For example, targeting the 5th percentile is very conservative - essentially 95% of all other outcomes are better than the chosen target. If you were to target the 95th percentile, only 5% of outcomes are more favorable. Once you have selected your **Simulation Points** and **Probability of Shortfall**, click **Solver Report**. This will send your results to the specified template. Key pages from a **Solver Report** are displayed below:

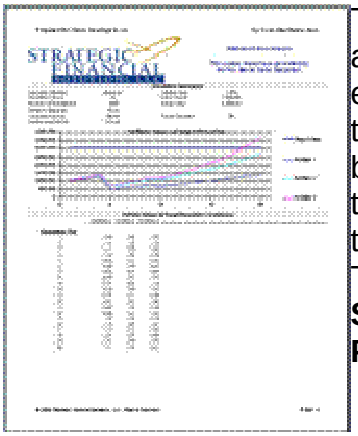


A Portfolio Report is used to test <u>one</u> portfolio against your assumptions and constraints. This is generally one of the last steps in your asset allocation testing. After you have found a portfolio that meets your criteria using the **Solver Report**, the **Portfolio Report** can be used to illustrate the entire simulation distribution from the 5th to the 95th percentile on your selected portfolio. The only options available in the dropdown menu are portfolios plotted on the efficient frontier. If you wanted to test one of the breakpoints or interval points using the **Portfolio Report**, you must plot it as a portfolio. Select your desired portfolio from the dropdown menu and specify the boundaries of the displayed distribution. As stated earlier, you can show from the 5th to 95th percentile. Click **Portfolio Report** to send your results to the specified template. Key pages from a **Portfolio Report** are displayed below:

3.12 - Efficient Frontier Custom Report Export

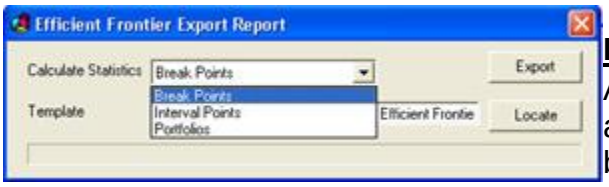
<u>Efficient Frontier Optimization Results – Simulate and Export</u>





The **Efficient Frontier Line** and underlying data can be exported into an Excel template using the **Export** button. The export feature and the template function similarly to PerTrac Publisher Templates. Additionally, the **Simulate** button will launch the **Portfolio Planning and**

Simulation Tool which will enable you to run probability analysis scenarios on your portfolios, breakpoints or interval points using annual positive and negative cash flow assumptions.

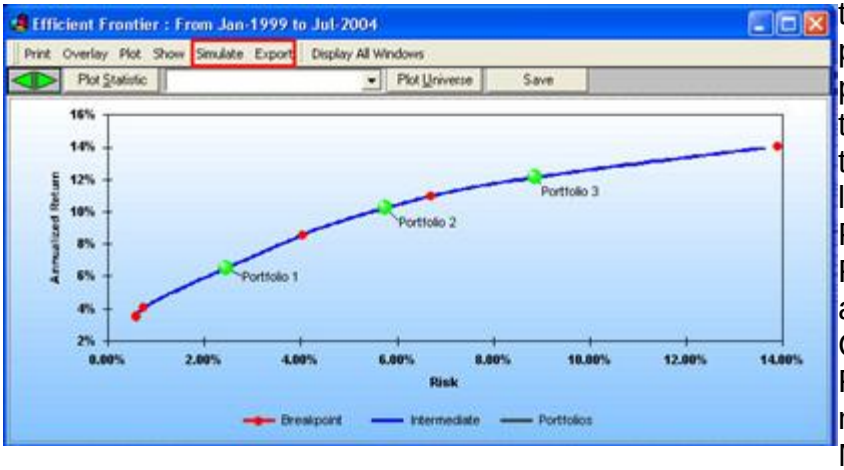


Export

As stated earlier, the Export option allows you to export your portfolios, breakpoints or interval points into a template that displays pre-drawn charts and tables in an attractive Excel-based format. These templates are fully customizable and can be used as templates for all of your exporting from the efficient frontier. Once you have plotted your desired portfolio(s), click **Export**. A new dialog window will appear prompting you to choose breakpoints, interval points or portfolio(s) to export.

NOTE: The breakpoints are the red corner points on the efficient frontier line; the interval points are ten portfolios PerTrac creates equally spaced portfolios across the efficient frontier line from conservative to aggressive; the portfolios option will produce a report containing the portfolios the user has plotted either on or off of the efficient frontier line.

Once you have selected one of these three options you must click **Locate** to specify an export template. PerTrac is pre-loaded with three custom templates and one blank custom template for this function. At this time we have a template



that compares two portfolios, three portfolios and one to ten portfolios. All of these templates are located within your PerTrac\Custom Reports subdirectory and start with the Custom Efficient Frontier prefix. You may also select the MasterEfficientFrontierReport.xls file and create your own custom template. For more detailed information on how to customize PerTrac Templates, see the section on PerTrac Publisher. An example of the one to ten portfolios template is shown to the right of this text.

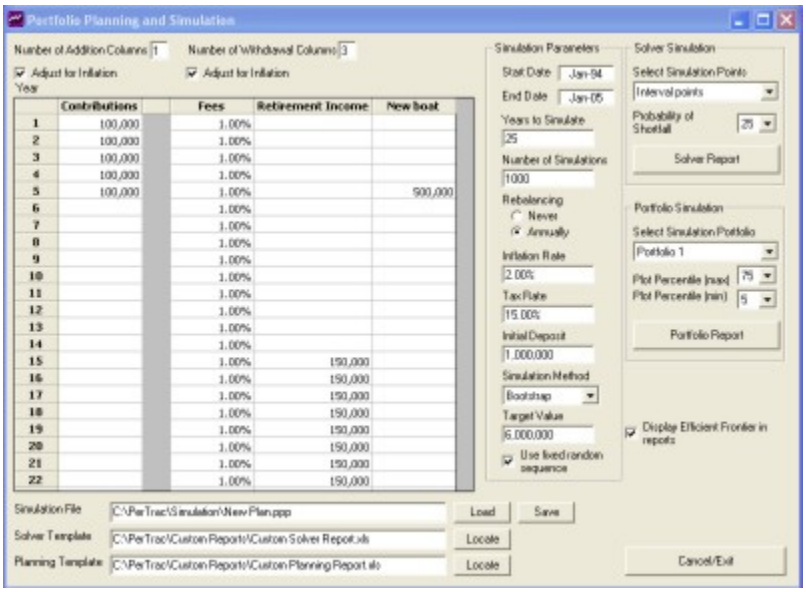
3.13 - Financial Planner and Simulation - View the online tutorial!

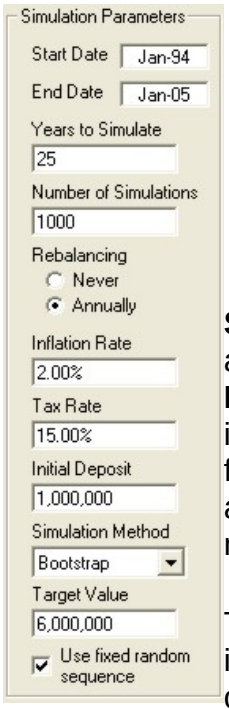
Simulate

This tool allows you to determine whether your selected breakpoints, portfolio(s) or interval points have a high or low probability of achieving a target value over a given time frame.

NOTE – Any changes to the underlying inputs in the Efficient Frontier to create you portfolio will flow through to this module.

Portfolio Planning and Simulation window opens. There are multiple inputs and restrictions that you can apply to your analysis. Let us first consider **Simulation Parameters**.





Simulation Parameters – Simulation Parameters allow you to apply specific constraints to the analysis. The **Start** and **End Date** are the first two options in the box. This date range will impact the analysis greatly as this is the sample period drawn from in order to produce the results for this module. These dates are fixed prior to entering the **Portfolio Planning and Simulation** module in the **Asset Allocation Window**.

The next option is **Years to Simulate**. Enter the number of years into the future you wish to simulate. PerTrac gives you're the option of simulating from 1 to 50 years in your analysis.

The **Number of Simulations** refers to how many portfolios are generated to draw a distribution. This number should typically range from 1,000 to 10,000.

Rebalancing refers to how often the individual portfolio simulations will rebalance to the original portfolio allocation. For example; one portfolio you simulate may originally be 50% S&P 500 and 50% Lehman Aggregate Bond index. If you choose to rebalance **annually**, the simulation will yearly start the year with a 50/50 mix. If you choose to **never** rebalance, each simulation will begin with a 50/50 mix but those allocations will change depending on the growth of the assets.

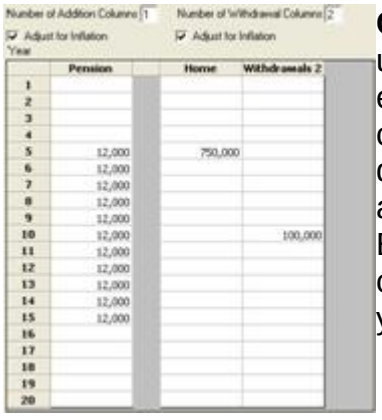
The **Inflation Rate** is used to adjust any cash flow that you have applied to the simulation. The inflation rate is not applied to ending annual balances. The cash flow inputs will be discussed later.

The **Tax Rate** you enter will be applied to the year-end balance if you have a positive return for the year. If you have a loss for the year no tax is calculated. Once the year-end amount has been taxed, withdrawals are then subtracted. Contributions are added on the first of the following year, and will be included in that year's ending value.

Initial Deposit refers to the starting dollar amount of the analysis while the **Target Value** refers to the desired result.

The **Simulation Method** determines how the distribution is to be drawn. The drop down menu lists the available simulation methods: **bootstrap**, **normal** and **lognormal**. Each of these methods is discussed in detail at the end of this section just before **Part IV**.

The last option is a check box allowing you to use the same **fixed random sequence** in your simulations. This check box is essential if you want to compare results after changing <u>any</u> input in the simulation. If you do not check this box, each time you regenerate a report, a new random sample will be used and your comparison will be distorted.


Number of Addition Columns 1 Number of Withdrawal Columns 2
Adjust for Inflation Adjust for Inflation
Year

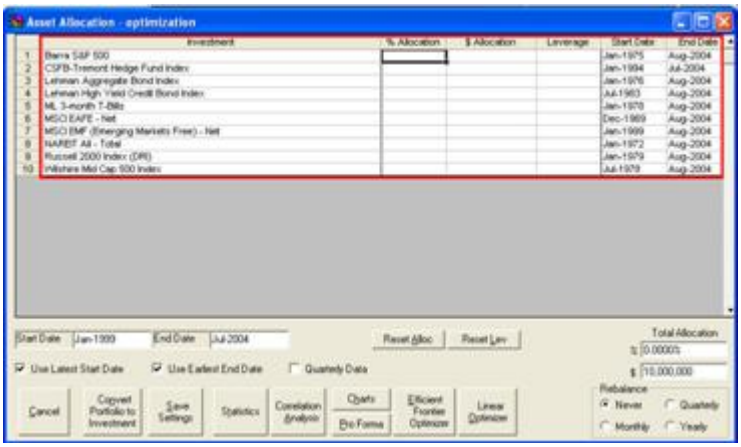
	Pension		Home	Withdrawals 2
1				
2				
3				
4				
5	12,000		750,000	
6	12,000			
7	12,000			
8	12,000			
9	12,000			
10	12,000			100,000
11	12,000			
12	12,000			
13	12,000			
14	12,000			
15	12,000			
16				
17				
18				
19				
20				

Cash Flow Options – Cash flows can be incorporated using the additions and withdrawals columns. You can enter up to four columns of annual additions and four columns of annual withdrawals. The number of rows displayed here represents an individual year within the analysis. If you select 20 years, you will see 20 rows. Each addition or withdrawal column can have a custom name. The default names will appear unless you change them. Please refer to the **Workbook**

Designer section for more information on customizing the column names. If you want your cash flows to **Adjust for Inflation**, use the appropriate check box and enter a desired annual inflation rate.

Portfolio Construction

3.04 - Portfolio Construction – Universe Allocation Window - View the online tutorial!



The **Asset Allocation Window** allows you to define the allocations and leverage for each investment in a portfolio. You can open the **Asset Allocation Window** by clicking the **Universe Statistics, Charts, Asset Allocation and Optimization** button from the **Current Universe Window** or by clicking the **Universe** button on the **Tool Bar**.

The top of the window contains a table with the name of each investment in the current universe, along with columns titled **%Allocation**, **$Allocation, Leverage**, **Start Date**, and **End Date**. The start and end dates are for informational purposes only. However, you can set the values for the **Allocation** and **Leverage** columns by using the controls at the bottom of the window or by typing in each cell. Command buttons are also located at the bottom of the window that will execute the various portfolio analysis functions, which we discuss later in greater detail.

Setting Up an Asset Allocation

Allocation Percentage and Dollar Amount

PerTrac allows you to either type in a percentage allocation per investment or a dollar amount allocation per investment. The default **Total Allocation $** dollar amount is $10,000,000. To determine the percentage of allocated to an investment, enter a percent value in the **%Allocation** column in the current universe (20%, for example, could be entered as either ".2" or "20%"). Alternatively, you could enter a specific dollar amount in the **$Allocation** column. Allocations may also be copied from the **Efficient Frontier Optimizer** or the **Linear Optimizer** which will be discussed later.

As you enter each value, the **Total Allocation %** box at the bottom left of the **Asset Allocation Window** displays the total allocated amount entered. Clicking **Reset Allocation** clears all values in the **Allocation** columns, allowing you to start your allocations from scratch. If no allocation percentages or dollar

amounts are entered, PerTrac will create an equally weighted allocation to each investment.

Leverage

The **Leverage** column is located to the right of the **$Allocation** column and requires a ratio value. Entering a 2, for example, would cause the returns or that investment to be leveraged 2 to 1. You can also enter negative numbers in the leverage field to take a short position in an investment. For example, a leverage factor of -1 would mean you are short that particular return stream at a ratio of 1:1 (or no) leverage. Clicking the **Reset Lev** button clears all values in the **Leverage** column. If no leverage ratios are entered, PerTrac assumes that the investments are not leveraged.

Portfolio Size

To define the size of the portfolio enter the dollar amount in the **Total Allocation $** box, below the **Total Allocation %** box. In the Pro Forma table, these values are used in conjunction with the values in the **Allocation** column to determine the actual dollar amount allocated to each investment unless you constructed your portfolio using the **$ Allocation** boxes, in which case the total allocation will be automatically calculated.

Rebalance Periods

Selecting one of the rebalance options, located below **Total Allocation** box, allows you to maintain the intended allocation over time. At the end of each month, quarter, or year, PerTrac will divide the equity among the investments according to the allocation percentages. The resulting equity additions and withdrawals will be reflected in the **Pro Forma** table, discussed later.

Start Date & End Date

The **Start Date** and **End Date** boxes, located to the left of the **Reset Allocation** button, allow you to define the time period for which all calculations are made. Checking the boxes labeled **Use Latest Start Date** and **Use Earliest End Date** will cause PerTrac to take only the common dates for all investments into consideration provided the investments have at least one month in common.

If you attempt to compute statistics or optimize over non-common date ranges, the **Index Calculation Options Window** will open, prompting you to choose how to proceed with your pro-forma calculations. You can either reallocate assets to only those investments that have data, assume a zero or risk-free rate return (which you can define) for investments that have no data, or default to the common date range. Keep in mind that, if you choose to use date ranges for which some investment have no data,

the statistics for the individual investment will be inaccurate when viewed through the Asset Allocation function.

Quarterly Data Option

If you want to work solely with quarterly data, check the **Quarterly Data** box, located to the right of the **Use Earliest End Date** box.

Saving An Asset Allocation

When PerTrac saves an asset allocation, a new universe is created that contains not only the names of the investments, but the values in the **Allocation** and **Leverage** columns as well. Click the **Save Settings** button to save this universe under a new file name. When you view an allocated universe in the **Current Universe Window**, the **Allocation** and **Leverage** values will be displayed in brackets following the name of the investment. When you open the **Asset Allocation Window** for this universe, the **Allocation** and **Leverage** fields will automatically contain the saved values.

Converting a Portfolio to an Investment

There are two areas in PerTrac to construct allocated portfolios. Here using the **Convert Portfolio to Investment** option and the next section 3.05 **Portfolio Builder**. Examples of allocated single investments would be a fund of hedge funds, a diversified portfolio of investments, or a policy benchmark comprised of allocated benchmarks. Clicking the **Convert Portfolio to Investment** button will open a window to name your composite investment. Note that the data source is **User** which means your new fund is not associated with any data vendor investment.

All portfolios that are converted to an investment will appear in the investment list in the **Current Universe Window** and can be treated in the same way as any other investment. This is, therefore, an ideal method of creating an index with which to make a comparative analysis.

TIP – It may be a good idea to label both your investment and universe with the same name. You may not recall how you created the investment unless you have a saved universe file with the allocation per asset saved.

3.05 - Portfolio Construction – Portfolio Builder - View the online tutorial!

Portfolio Builder

While converting a portfolio to an investment is a quick and convenient way to analyze its performance, you may have more complex needs that require the allocation to change periodically, perhaps even on a monthly basis. This situation can be handled with the **Portfolio Builder**. The Convert Portfolio to investment option explained above in section 3.04 is a quick way to create single investments from a universe of funds or benchmarks. However, the data series will reflect the investments and allocations entered in the universe allocation window. If your allocations change over time, or if you hire or fire managers over time, the Convert Portfolio to Investment option will not reflect all of those changes. You would continue to overwrite the original investment wiping out prior period adjustments to the portfolio. The **Portfolio Builder** feature on the other hand was designed to build portfolios taking into account all of the changes you make to the portfolio over time. This tool can be utilized to create portfolios of investments or benchmarks.

1. Select **Portfolio Builder** from the **Tools** menu.
2. When the **Portfolio Builder Window** opens, click the **Select Universe** button and choose an existing universe file. Ideally, this universe should contain every investment that you want to use to build your portfolio, even investments that are no longer used within your current allocation.
3. Once the universe is open, the first column in the spreadsheet will be labeled “Date” and the last column in the spreadsheet will be labeled “Total Allocation”. Between these columns will be a column for each item in your universe – you may need to use the scrollbars to view the entire spreadsheet. Enter the date on which you would like your portfolio to begin in Row 1 of the **Date** column.
4. Enter the desired allocations using either percentage or decimal numbers; (i.e. “15%” and “.15” are interchangeable). It is not necessary to enter an allocation if you wish to exclude an item from the portfolio. As you enter your allocations, the **Total Allocation** column will display the sum of the current month’s allocation.
5. Your allocations can be entered on a monthly basis if you know the allocations at the end of each month. Your other option would be to allocate only when you wish to rebalance the portfolio. For example, if you begin with Jan-1990 on Row 1, and

want to either rebalance back to that allocation or change the allocation for May-1990, it is not necessary to enter allocation values for February, March, and April. The February, March and April allocations will change based on what the asset performance, basically no rebalancing. In this case, the date for Row 2 would be May-1990.

Note: If you create portfolios using the universe allocation window you will have the option to rebalance your portfolio Never, Monthly, Quarterly or Annually. However, the Portfolio Builder does not have those options. Rebalancing will only take place if you enter a new row of allocations.

6. Continue to enter allocations in this way for each change in the portfolio. Since the **Date** column contains the date of the first month of each new allocation, the final allocation will require an end date to be entered in the **Ending Date** box, located near the bottom right of the **Portfolio Builder Window**.
7. Before converting this information into a single investment, you can save the allocation settings as a spreadsheet by clicking **Save Allocation** and entering a name for the ".vts" file. This can be loaded in the future by clicking **Load Allocation** and selecting the saved file.
8. If, for any time period, the total allocation is less than 100%, the portfolio builder will assume this to be cash and will apply a percentage rate of return to the remaining money based on the value in the **Interest Rate** box, located at the bottom right of the **Portfolio Builder Window**. You can change this value by entering a new percentage or decimal number.

NOTE: if you do have an allocation to cash, you can either enter an interest rate here to represent cash or add a cash benchmark (for example: ML 3 month t-bill) to your universe and allocate to that benchmark.

9. On the other hand, if the total allocation is greater than 100% for a given time period, the portfolio builder assumes you are using leverage and will adjust the net asset value based on the value in the **Loan Rate** box, on the borrowed funds , located above the **Interest Rate** box.
10. The **Initial Investment** defaults to 10,000,000. You can change this number based on your needs.
11. The **Portfolio Builder** Window allows you to **Remove Investment** or **Add Investment** right from the current window. This comes in handy when you are changing monthly allocations due to hiring/firing managers over time.
12. Once you have made all the necessary entries, click **Build Portfolio**.

13. When the **Convert Portfolio To Investment Window** opens, enter a name and select a data source for your new investment and click **Enter**.

In addition to creating a new investment in your database, the **Portfolio Builder** will generate a spreadsheet that displays both total and individual net asset values of the portfolio for each month in the data stream. Double-right-clicking over this spreadsheet will transfer the spreadsheet to the Formula One Workbook Designer, where it can be edited, formatted, and saved as a ".vts" file.

NOTE – You must re-load the master universe (all.unv) by clicking the **Load Master Universe** button before the **Current Universe Window** will list the new investment.

Command Buttons

- **Reset Alloc** - Clears all values in the **Allocation** column.
- **Reset Lev** - Clears all values in the **Leverage** column.
- **Cancel** - Closes the Asset Allocation Window.
- **Convert Portfolio to Investment** - Allows you to convert a portfolio of investments or benchmarks into a single investment.
- **Save Settings** - Allows you to save the investment names, allocation percentages, and leverage values as a separate universe.

NOTE – The following buttons initiate commands that will be discussed later

- **Statistics** - Opens the **Universe Statistics Window**, allowing you to display a variety of statistics for each investment in your portfolio.
- **Correlation Analysis** – Allows you to create correlation analysis tables, providing an indication of the diversification of your portfolio.
- **Charts** - Opens the **Universe Charts Window**, allowing you to quickly create, edit, and save a wide variety of charts for the current portfolio and the underlying investments.
- **Pro Forma** - Opens the **Pro Forma Window**, allowing you to view a variety of historical performance and summary data based on the allocation settings for your portfolio.
- **Efficient Frontier Optimizer** - Opens the **Efficient Frontier Setup Window**, displaying an Efficient Frontier Plot, along with a

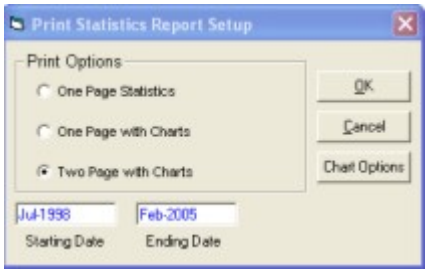
corresponding Risk Table, Allocation Table, Allocation pie chart, and tracking error pie chart that displays a Markowitz risk/return optimization.

- **Linear Optimizer** - Opens the **Linear Optimization Setup Window**, allowing you to display optimal portfolios targeting a specific statistic.

PerTrac Investment Summary Reports

4.01 - Print Investment Summary Reports - View online tutorial!

PerTrac contains three **Investment Summary Reports**: Print Investment Summary Report, Print Multiple Investment Summary Reports, and Print Investment Information and Statistics Tables.



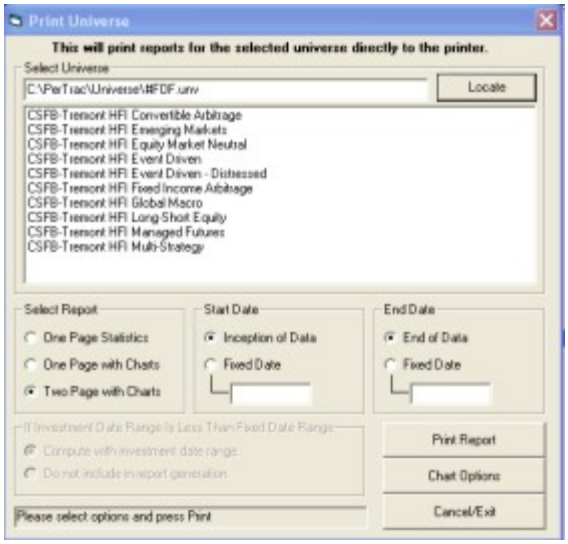
1. To produce the **Summary Reports** click the **Reports** tab located on the upper menu bar. Then select **Print Investment Summary Reports.**
2. The Report Setup Window will appear. There are three investment report options. One Page Statistics, One Page with Charts, Two Page with Charts. The report date range is shown below the report options. By default, the date range is set to cover the entire data history of the fund. The **Starting Date** and **Ending Date** can be changed if you want to run the report over specific time periods or market cycles.
3. If you select One Page with Charts or Two Page with Charts, there is a **Chart Options** button on the right side of the setup window to format the charts. The output for each report consists of the following:
    a. **One Page Statistics-** This one page report contains the qualitative information from the **General Investment Information** page as well as the tables from the **Investment Statistics** page;
    b. **One Page with Charts-** This one page report contains the qualitative information from the **General Investment Information** page and a few of the tables from the Investment Statistics page;
    c. **Two Page with Charts-** This two page report is the most comprehensive of the three report options and it contains the qualitative data from the **General Investment Information** page and all of the tables and quick charts from the **Investment Statistics** page.

NOTE: The report will be displayed in the **Summary Report Window**, where you will have several options for editing, printing, and page layout.

Double-right-clicking over the report opens the **Workbook Designer**, where you will have more advanced editing capabilities. The file can also be saved as an Excel file (using the "Save As" button) which can then be edited in Excel.

4.02 - Print Multiple Investment Summary Reports

Investment Summary Reports can also be printed for each item in a universe as a batch.



1. From the **Reports** menu, select **Print Multiple Investment Reports**.
2. When the **Print Universe** window opens, click **Locate** to select the desired universe.
3. Choose the type of report you wish to create.
4. Using the **Start Date** and **End Date** boxes, designate a fixed or specify that the report should cover the full history of each fund.
5. If the date range of an investment is less than the fixed date range, you can select either to exclude it from the reports or print the report using the available data.
6. Click **Print** to finish.

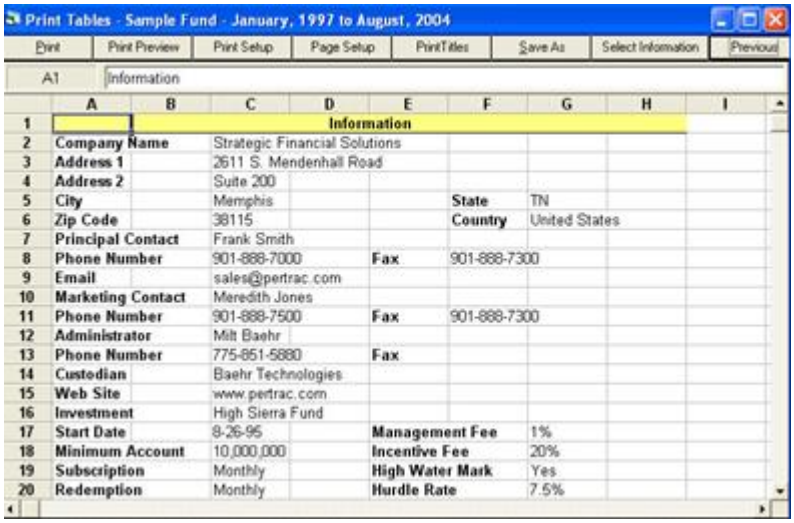
You do not have to format charts every time you print a new report. You can store your chart settings by clicking **Chart Options** from any of the **Investment Reports** setup windows. This will allow you to use the **Chart Designer** to edit the chart to your liking. When finished, click the **Save Settings** button.

NOTE: There is only one option to produce the universe reports, **Print Report,** which will spool the reports to the printer.

4.03 - Print Investment Information & Statistical Tables

You can also create single investment reports that include only the information or statistical tables that you select over a time frame that you specify. Selecting **Print Investment Information and Statistical Tables** from the **Reports** menu opens the **Investment Tables Setup Window**. The **Investment Tables Setup Window** allows you to check off all the information you would like to include, as well as the date range for the tables. Once you have made your selections, click **Print** to display the report.

Investment Tables Window



	A	B	C	D	E	F	G	H	I
1			Information						
2	Company Name		Strategic Financial Solutions						
3	Address 1		2611 S. Mendenhall Road						
4	Address 2		Suite 200						
5	City		Memphis			State	TN		
6	Zip Code		38115			Country	United States		
7	Principal Contact		Frank Smith						
8	Phone Number		901-888-7000		Fax	901-888-7300			
9	Email		sales@pertrac.com						
10	Marketing Contact		Meredith Jones						
11	Phone Number		901-888-7500		Fax	901-888-7300			
12	Administrator		Milt Baehr						
13	Phone Number		775-851-5880		Fax				
14	Custodian		Baehr Technologies						
15	Web Site		www.pertrac.com						
16	Investment		High Sierra Fund						
17	Start Date		8-26-95		Management Fee		1%		
18	Minimum Account		10,000,000		Incentive Fee		20%		
19	Subscription		Monthly		High Water Mark		Yes		
20	Redemption		Monthly		Hurdle Rate		7.5%		

The tables will be displayed in the **Summary Report Window**, where you will have several options for editing, printing, and page layout. Double-right-clicking over the report opens the **Workbook Designer**, where you will have more advanced editing capabilities.

Command Buttons

- **Print** - Prints the report.
- **Print Preview** – Displays a preview of how the report will look.
- **Print Setup** - Allows selection of printing properties such as printer, paper source, and page orientation.
- **Page Setup** - Allows specification of margins, headers, footers, etc.
- **Print Titles** - Allows you to highlight a field in the report that will be used as the report title.

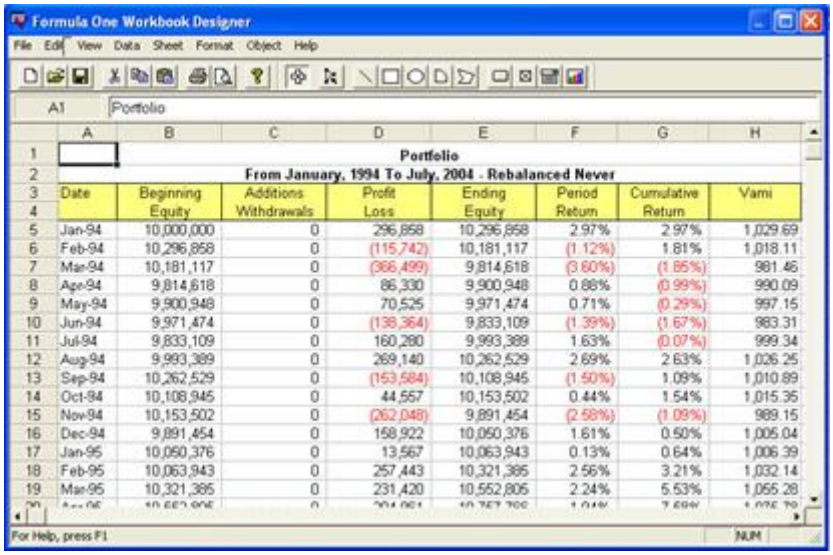
- **Save As** - Saves the report for future use. When saving the report, you can choose a different file type, such as Excel, which will allow you to view the report in a different program later.
- **Select Information** - Opens the **Report Setup Window**, allowing you to change either the date range or the report type.
- **Previous** - Shows the report for the previous investment in the universe.
- **Next** - Shows the report for the next investment in the universe.

4.04 - Workbook Designer

The **Workbook Designer** is used to display and edit most reports created within PerTrac. It gives you tremendous flexibility when it comes to formatting, editing, or saving reports. The Workbook Designer can be activated by placing your cursor over the report and double-right-clicking. This action will opens an editable copy of the report in the Workbook Designer and allows you to save the report for future use.

NOTE: You can also open the Workbook Designer program directly by selecting **Programs/PerTrac/Spreadsheet Designer** from the **Start** menu.

Workbook Designer



Workbook Designer Functions

Most of the functions in the workbook designer are very similar to functions in widely used spreadsheet programs. Some of the more common functions are listed below.

Saving a Workbook Designer file

Selecting **Write** from the **File** menu opens the **Write File** dialog box, where you can name and specify the location of the new file. When saving a worksheet, you can choose a different file type, such as Excel, which will allow you to view the report in a different program later.

Opening a Previously Saved Workbook Designer File

Selecting **Read** from the **File** menu opens the **Read File** dialogue box, where you can select a file you wish to view. You will see a message warning that the contents of the existing workbook will be erased in order to read in the new workbook. Clicking **Yes** allows you to proceed.

Cut, Copy and Paste

Highlight the range of cells you want to cut or copy then select either **Cut** or **Copy** from the pop-up menu. To paste the contents of the clipboard, select the cell that represents the upper left corner of the range in which you want to paste and select **Paste** from the pop-up menu.

Inserting or Deleting Rows, Columns or Cells

To insert a row or column, click on the row number or column letter just below (in the case of rows) or just to the right (in the case of columns) of where you want the new row or column to go. Select **Insert** from the **Edit** menu. To insert a cell, highlight the cell where you want the new cell to go and select **Insert** from the **Edit** menu. The current cell and all cells to the right will be shifted right to accommodate the new cell.

To delete a row, column or cell, click on the row number, column letter, or cell you want to delete and select **Delete** from the **Edit** menu.

Adding a Chart To a Report

From the Workbook Designer, click the chart icon at the far right of the icon bar. The chart tool will be activated. Click and drag on the sheet to define the size of the chart and where you want it placed. Once the chart area is defined, the Chart Wizard will open, giving you a variety of charting options.

Help Index

The Workbook Designer also has a Help index to guide you through various tasks. The online help can be accessed from the **Help** menu.

PerTrac Publisher Reports

4.05 - PerTrac Publisher Reports - View the online tutorial!

PerTrac Publisher is a comprehensive report generator which enables you to quickly create customized client and prospect performance reports, investment committee documents, and more. There are three benchmark report options and two custom report options. The **Benchmark Reports** include pre-built **Performance, Style, and Peer Analysis** reports that can be run on a single fund or multiple funds. The two **Custom Report** generators, **Generate Custom Reports** and **Generate Combination Reports,** give users a powerful tool for creating their own custom report templates.

4.06 - Performance Measurement Report - View the online tutorial!

This report is a comparative performance and risk analysis of an investment versus one or two benchmarks.

NOTE: All publisher reports can be generated on a single fund or a universe of funds.

This report contains the following tables and charts:

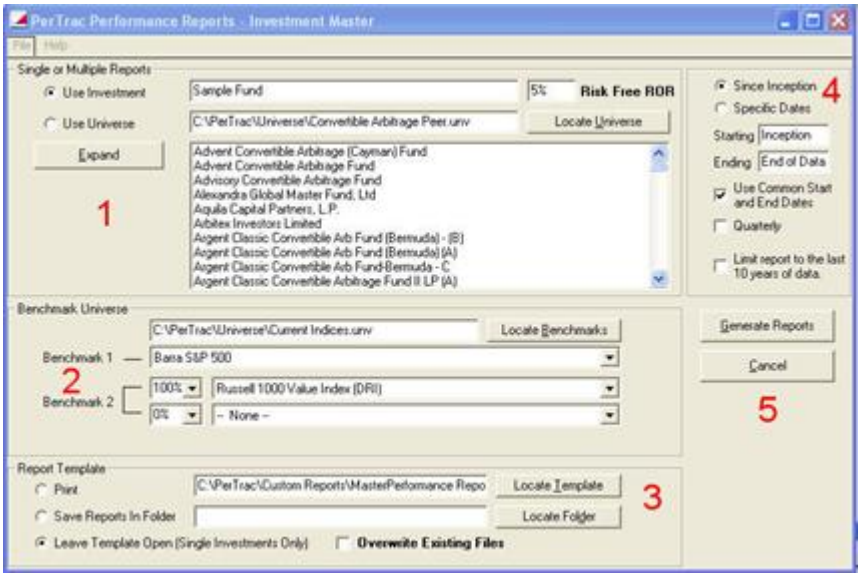
- **Period Return Performance Table**: This table contains the 1 Month, 3 Month, 6 Month, YTD, 1, 2, 3, 5, 7, & 10 year annualized returns for the selected investment and benchmarks. The table also contains the differential time period performance between the investment and the benchmarks.
- **Calendar Year Performance**: This table contains the last 10 years of calendar year returns for the investment and the

benchmarks. The table also contains the differential calendar year performance between the investment and the benchmarks.

- **Historical Standard Deviation Chart**: This chart contains the 1, 3, 5, 7, & 10 year annualized standard deviation for the investment and the benchmarks.
- **Historical Sharpe Ratio Chart**: This chart contains the 1, 3, 5, 7, & 10 year annualized Sharpe Ratio for the investment and the benchmarks.
- **Risk/Return Scatterplot Chart**: This chart shows an annualized Risk/Return scatterplot for the investment and benchmarks.
- **Combination Chart**: This chart shows the VAMI (Value Added Monthly Index or Growth of $1,000) and the monthly returns for the investment only.
- **Correlation Table**: This table contains the correlation analysis statistics of the investment relative to the benchmarks.
- **Capture Ratio Table**: This table contains the capture ratios of the investment relative to the benchmarks.

How do I Generate the Performance Measurement Report On A Single Fund?

1. Select an investment by highlighting the investment in the PerTrac **Home** window.
2. Click the **Reports** button located on the upper menu bar and select **PerTrac Publisher.**
3. The PerTrac Publisher report selection window will open. On the left hand side you will see two gray buttons labeled **Benchmark Reports** and **Custom Reports**. Click **Benchmark Reports**. There will be a report icon labeled **Performance Measurement Report.**
4. To run the report, double click on the report icon. A setup window will appear.



There are five sections of inputs that must be selected prior to generating the performance measurement report. The sections are numbered on the screenshot above.

1. **Fund Selection:** The first step is to select a fund on which to generate a report. The **Use Investment** option should be selected on the upper left. If you are generating the report for one fund, and you highlighted that fund on the home window prior to opening this setup window, the fund will be automatically listed in the **Use Investment** window.

TIP: If the fund is not listed in the **Use Investment** window, click **Locate Universe** to open the universe that contains the fund. If the universe contains numerous funds, click **Expand** on the left to see an expanded view of the universe. When you find the fund that you want in this list, double-click on it and it will appear in the **Use Investment** window.

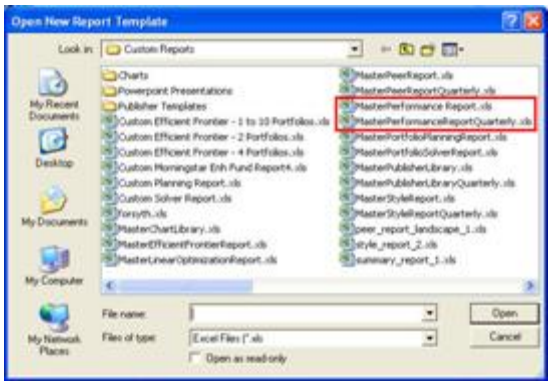
NOTE: Next to the fund name is a box that contains the risk free rate of return for the Sharpe ratio, Downside Deviation and Sortino ratio calculations. You may change the risk free return to reflect the value most appropriate for the time period being reported. This risk free return setting is independent from the one used on the Investment Statistics page back in PerTrac.

2. **Benchmark Selection:** One or two benchmarks may be selected for this report. Click **Locate Benchmarks** to locate the universe that contains your benchmarks. This could be the “Correl.unv” universe or any universe of benchmarks you have created. When the benchmark universe has been selected, click the **Down Arrow** at the end of the **Benchmark 1** window to select

the first benchmark. Then click the **Down Arrow** at the end of the **Benchmark 2** window and select the second benchmark.

NOTE: The second benchmark can be a composite of two benchmarks. Click both **Down Arrows** at the end of the window to select the two benchmarks, then click the **Down Arrows** in the windows to the left of the Benchmark names to select the allocations to each benchmark.

4. **Template Selection:** Click the **Locate Template** button. The custom reports folder will appear with a list of Excel template files. There are two pre-built files for this report that should be used initially. The **MasterPerformanceReport** is designed for funds with monthly return streams, and the **MasterPerformanceReportQuarterly** is designed for funds with monthly or quarterly return streams.



NOTE: when the **Save Reports in Folder** option is selected you must click the **Locate Folder** button to select the folder in which the reports will be saved.

NOTE: You also have the option, just below the folder window, to **Overwrite Existing Files.** When the report is saved to a folder, the name of the file will be the name of the fund if you choose this option.

4. **Date Range Selection:** Set your report **Starting** and **Ending** date range. **Inception** to **End of Data** is the default setting. When the **Specific Dates** option is selected you can type a start and end date in the **Starting** and **Ending** date boxes. Under the date range option you can elect to **Use Common Start and End Dates** (the common start and end dates for the fund(s) and benchmark(s), to run the report **Quarterly**, or to **Limit report to the last 10 years of data**.

TIP: If you elect to run the report **Quarterly,** you must select the MasterPerformanceReportQuarterly Excel template.

5. Click **Generate Reports**. This will open the report in Excel. The report will be a read-only file, so you must save the newly generated report with a

different name. For example you might want to save the file with the report date in the file name.

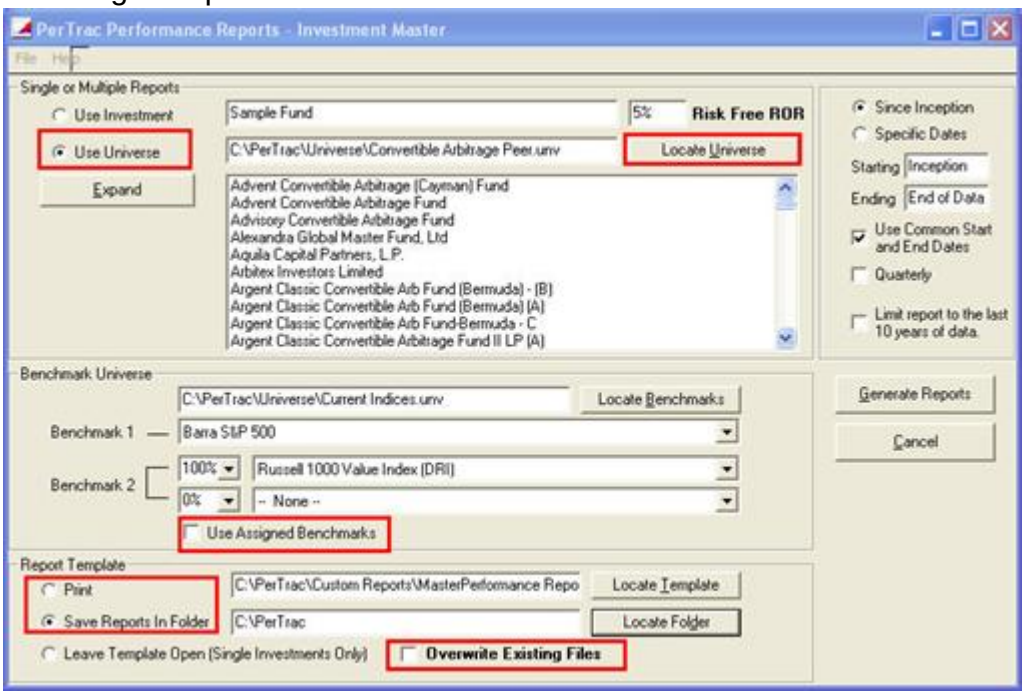
There are three output options for generating your reports: **Print,** which will send the report directly to the printer; **Save Reports in Folder,** which saves the file(s) in a folder of your choosing; **Leave Template Open (Single Investments Only)** which will open the report in Excel.

There are three output options for generating your reports: **Print,** which will send the report directly to the printer; **Save Reports in Folder,** which saves the file(s) in a folder of your choosing; **Leave Template Open (Single Investments Only)** which will open the report in Excel.

TIP: You may make formatting changes to the report prior to saving. You can add your logo to the report, change the colors, or format the report in any way using Excel's formatting functions. You would then save the template under a new name. This would be your new template, which you could select for future reports in Step 3 of this process.

How do I Generate the Performance Measurement Report on a Universe of Funds?

The process for generating the Performance Measurement Report on a universe of funds is the same as the process listed above for a single fund with the following exceptions:



1. In section 1 of the setup window select **Use Universe**.
2. Click the **Locate Universe** button to select the universe of funds.
3. If the universe contains funds with different strategies or asset classes, and you have assigned specific benchmarks to the funds in the universe, check the **Use Assigned Benchmarks** option. If you have not assigned benchmarks the two benchmarks shown in the select benchmark windows will apply to all funds in the universe. Please refer to section 2.13 for instructions on assigning benchmarks.
4. When generating the report on a universe of funds there are two options for outputting the reports: **Print**, which will send the reports to the printer; and **Save Reports in Folder**, which will save the reports in a folder.
5. If you would like to overwrite existing reports, select **Overwrite Existing Files.**

TIP: If you elect to save the reports in a folder, click **Locate Folder** to locate the folder where the reports will be saved. The reports will be saved under the names of each of the funds in your universe.

4.07 - Style Analysis Report - View the online tutorial!

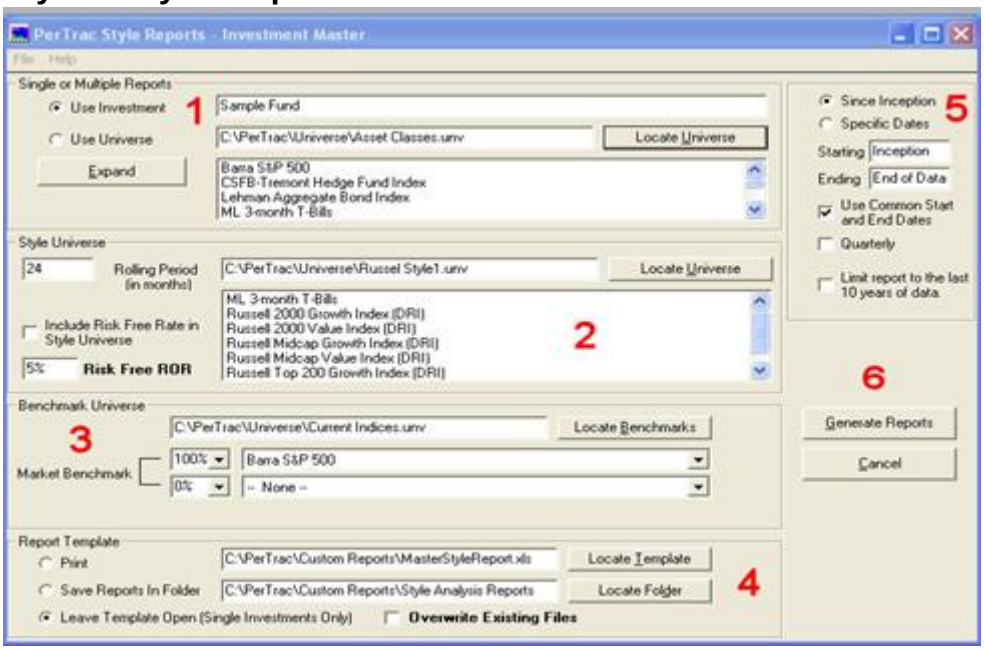
The Style Analysis Report is a pre-built, three-page report containing comparative performance and risk analysis of a fund versus a style benchmark and market benchmark, followed by two pages containing the fund's style analysis output.

- Page 1: The first page of the report is the Performance Measurement Report seen above. However, in this version of the report, the two benchmarks for comparison are the style/blended benchmark and the market benchmark.
- Page 2: Contains a bar chart showing the allocations of the style/blended benchmark, correlation statistics relative to the style and market benchmarks, capture ratios relative to the style and market benchmarks, a cumulative return chart and cumulative differential relative to the style and market benchmarks.
- Page 3: A style history chart showing the style drift over time and rolling Beta, Correlation-R, R-squared, Alpha and Tracking Error relative to the style benchmark.

How do I Generate the Style Analysis Report On A Single Fund?

1. Select the investment for the report by highlighting the investment in the PerTrac **Home** window.
2. Click the **Reports** button located on the upper menu bar and select **PerTrac Publisher.**
3. The PerTrac Publisher report selection window will open. On the left hand side you will see two gray buttons, **Benchmark Reports** and **Custom Reports**. Click the **Benchmark Reports** button. There will be a report icon labeled **Style Analysis Report**.
4. To run the report, double click your left mouse button on the icon. A gray setup window will appear.

There are six sections of inputs that must be selected prior to generating the **Style Analysis Report**. The sections are numbered on the screenshot below.



1. **Selection:** If you are generating a report for one fund, and you highlight that fund on the home window prior to opening this setup window, the fund will be automatically listed in the **Use Investment** window.

TIP: If the fund is not listed in the **Use Investment** window, click **Locate Universe** to open the universe that contains the fund. If the universe contains numerous funds, click **Expand** on the left to see an expanded view of the universe. When you find the fund that you want in this list, double-click on it and it will appear in the **Use Investment** window.

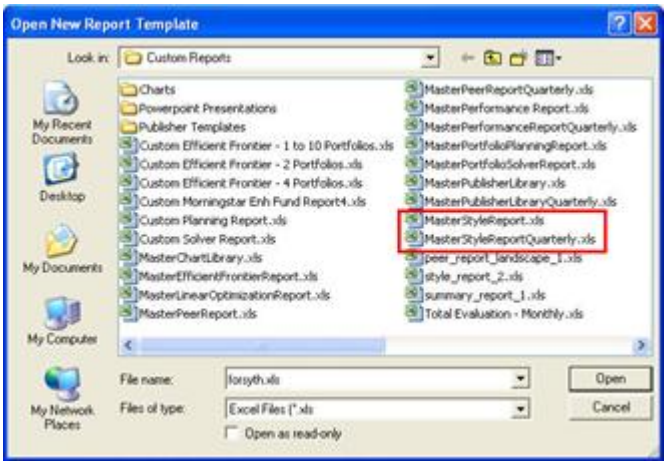
2. **Style Universe Selection:** Click the **Locate Universe** button to select the universe of benchmarks for style analysis.
3. To the left of the benchmark names you will find a **Rolling Period (in Months)** window. The rolling periods selected here will be used to create the Style History and Rolling Beta, Correlation-R, R-Squared, Alpha and Tracking Error charts. Below the **Rolling Period** window is an option to **Include Risk Free Rate in Style Universe.** Enter the appropriate risk free rate in the **Risk Free ROR** window.

TIP: Rather than using the **Include Risk Free Rate** option to represent cash, you could add a cash investment (i.e. ML 3-Month T-Bills) to the style universe to represent the cash component. You should also enter a risk free return in the **Risk Free ROR**, which will be used for the Sharpe Ratio, Sortino Ratio and Downside Deviation statistics.

4. **Benchmark Selection:** There will be two comparative benchmarks on this report. The **Style Benchmark,** which will be created as a result of the style analysis regression, and a **Market Benchmark**. To select the **Market Benchmark** click the **Locate Benchmarks** button in section three. This could be the "Correl.unv" universe or any universe of benchmarks you have created. When the universe has been selected, click the **Down Arrow** at the end of the **Market Benchmark** window to select the benchmark.

NOTE: The **Market Benchmark** can be a composite of two benchmarks. Click both **Down Arrows** at the end of the window to select the two benchmarks, and then click the **Down Arrows** in the windows to the left of the Benchmark names to select the allocations to each benchmark.

5. **Template Selection:** Click the **Locate Template** button and the custom reports folder will appear with a list of Excel template files. There are two pre-built files for this report that should be used initially. The MasterStyleReport designed for funds with monthly return streams, and the MasterStyleReportQuarterly designed for funds with monthly or quarterly return streams.



NOTE: when the **Save Reports in Folder** option is selected you must click the **Locate Folder** button to select the folder in which the reports will be saved.

NOTE: You also have the option, just below the folder window, to **Overwrite Existing Files.** When the report is saved to a folder, the name of the file will be the name of the fund if you choose this option.

6. **Date Range Selection:** Set your report **Starting** and **Ending** date range. **Since Inception** to **End of Data** are the default settings. When the **Specific Dates** option is selected you can type a start and end date in the **Starting** and **Ending** date boxes. Under the date range option you can elect to **Use Common Start and End Dates** (the common start and end dates for the fund(s) and benchmark(s), to run the report **Quarterly**, or **Limit report to the last 10 years of data**.

TIP: If you choose to run the report **Quarterly,** you must select the MasterStyleReportQuarterly template.

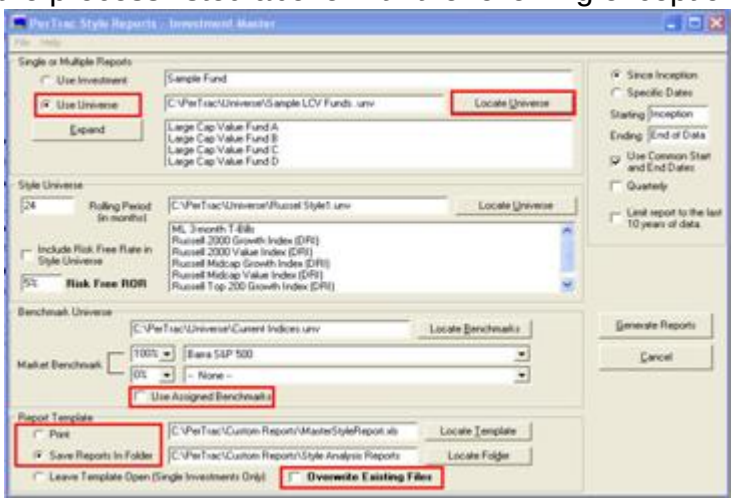
7. **Click Generate Reports**. This will open the report in Excel. The report will be a read-only file, so you must save the newly generated report with a different file name.

NOTE: There are three output options for generating the reports: **Print,** which will send the report directly to the printer; **Save Reports in Folder** which will save the file(s) in a folder of your choosing; **Leave Template Open (Single Investments Only)** which will open the report in Excel.

TIP: You may make formatting changes to the report prior to saving. You can add your logo to the report, change the colors, or format the report in any way using Excel's formatting functions. You would then save the template under a new name. This would be your new template, which you could select for future reports Step 4 of this process.

How do I Generate the Style Analysis Report on a Universe of Funds?

The process for generating the Style Analysis Report on a universe of funds is the same as the process listed above with the following exceptions:



Step 1: In section 1 of the setup window select the **Use Universe** option.
Step 2: Click **Locate Universe** to select the universe of funds for which reports will be generated.
Step 3: If the universe contains funds with different strategies or asset classes, and you have assigned specific benchmarks to the funds in the universe, check the **Use Assigned Benchmarks** option. If you have not assigned benchmarks the two benchmarks shown in the select benchmark windows will apply to all funds in the universe. Please refer to section 2.13 for instructions on assigning benchmarks.
Step 4: When generating the report on a universe of funds there are two options for outputting the reports: **Print**, which will send the reports to the printer; and **Save Reports in Folder**, which will save the reports in a designated folder.
Step 5: If you have previously saved files from a prior period, you can select **Overwrite Existing Files.**

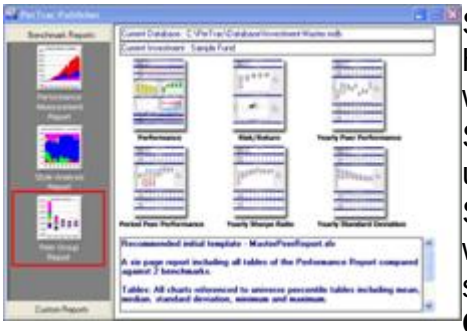
TIP: If you choose to save the reports in a folder, click **Locate Folder** to locate the folder where the reports will be saved. The reports will be saved under the names of each of the funds in your universe.

4.08 - Peer Group Analysis Report - View the online tutorial!

The Peer Group Analysis Report is a pre-built, six-page report that contains comparative performance and risk analysis of a fund versus two benchmarks followed by five pages that show the fund's rankings relative to its peers on numerous risk and return measures.

- Page 1: The first page of the report is the **Performance Measurement Report.**
- Page 2: This page shows the fund's peer ranking for a 1, 3, 5, 7, & 10 year Sharpe ratio, as well as, a peer universe Risk/Return scatterplot.
- Pages 3 through 6: These pages provide additional measures of the fund's performance relative to its peer group.

How do I Generate the Peer Group Report?



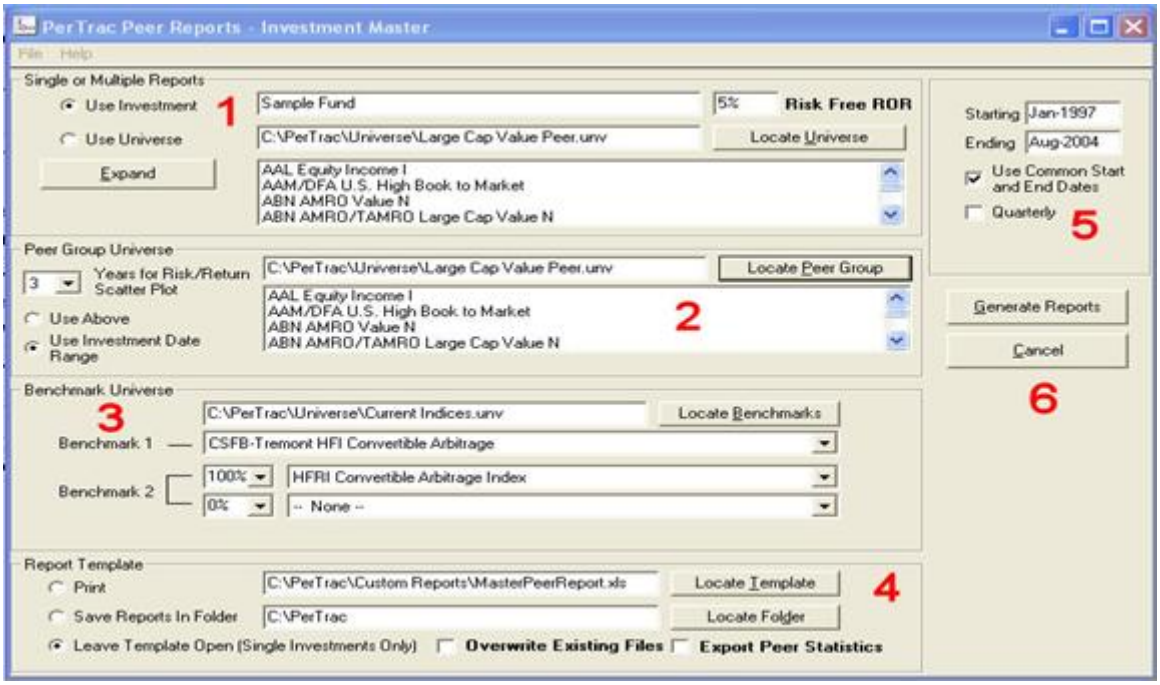
Step 1: Select the investment for the report by highlighting the investment at the PerTrac **Home** window.

Step 2: Click the **Reports** button located on the upper menu bar and select **PerTrac Publisher.**

Step 3: The PerTrac Publisher report selection window will open. On the left hand side you will see two gray buttons, **Benchmark Reports** and **Custom Reports**. Click the **Benchmark Reports** button. There will be a report icon labeled **Peer Group Report.**

Step 4: To run the report, double click on the icon. A gray setup window will appear.

There are six sections of inputs that must be selected prior to generating the **Peer Group Report**. The sections are numbered on the screenshot below.



1. **Fund Selection**: The first step is to select a fund on which to generate the report. If you are generating the report for one fund, and you highlighted that fund on the home window prior to opening this setup window, the fund will automatically be listed in the **Use Investment** window.

TIP: If the fund is not listed in the **Use Investment** window, click **Locate Universe** to open the universe that contains the fund. If the universe contains numerous funds, click **Expand** to see an expanded view of the universe. When you find the fund that you want in this list, double-click on it and it will appear in the **Use Investment** window.

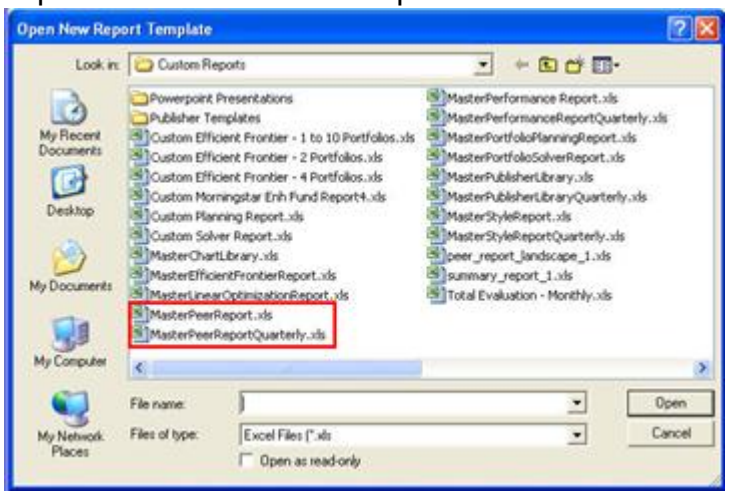
2. **Peer Group Universe Selection**: Click Locate Peer Group to select the peer universe to which your fund will be compared. To the left of the peer universe window you will find two options for the universe Risk/Return Scatter Plot date range. The default option is set to Use Investment Date Range. This can be changed by clicking the down arrow on the Years for Risk/Return Scatter Plot window giving you the option of producing the chart on a 1, 2, 3, 5, 7, or 10 year basis.

NOTE: If you select a specific year for the chart versus **Use Investment Date Range**, you must also click **Use Above** just below the year selection window.

3. **Benchmark Selection:** This report requires the user to select two comparative benchmarks. If you select only one benchmark, you will receive an error message when the report is generated that two benchmarks must be selected. Click the **Locate Benchmarks** button in the third section to locate the universe that contains your benchmarks. This could be the "Correl.unv" universe, or any universe of benchmarks that you have created. When the universe has been selected, click the **Down Arrow** at the end of the **Benchmark 1** window to select the first benchmark. Then click the **Down Arrow** at the end of the **Benchmark 2** window and select the second benchmark.

NOTE: The second benchmark can be a composite of two benchmarks. Click both **Down Arrows** at the end of each benchmark window to select the two benchmarks, and then click the **Down Arrows** in the windows to the left of the benchmark names to select the allocations to each benchmark.

4. **Template Selection:** Click the **Locate Template** button. The custom reports folder will appear with a list of template files. There are two pre-built files for this report that should be used initially. The **MasterPeerReport** designed for funds with monthly return streams, and the **MasterPeerReportQuarterly** designed for funds with either monthly or quarterly return streams.



NOTE: when the **Save Reports in Folder** option is selected you must click the **Locate Folder** button to select the folder the report will be saved to. You also have the option just below the folder window to **Overwrite Existing Files.** When the report is saved to a folder, the name of the file will be the name of the fund. This report has an additional option in section 4, **Export Peer Statistics.** If this is checked the Peer Group Data tab in the report will show the fund names in the peer universe and their values for each performance and risk measure shown in the report. To access this data when the report is generated, click **Format\Sheet\unhide,** on the Excel menu bar. Then select **Peer Group Data** to unhide this sheet.

5. **Date Range Selection:** set your report **Starting** and **Ending** date range. **Since Inception** to **End of Data** is the default setting provided the data series does not exceed 10 years. This report is has a 10 year maximum date range. There is a **Use Common Start and End Dates** option that will run the report over a common date range between the fund and the benchmarks. There is also a **Quarterly** check box if you are running the report on funds with quarterly data streams, or if you want to run funds with monthly data streams on a quarterly basis.

NOTE: If you change the start date to reflect a date range longer than 10 years, Publisher will automatically adjust the date range to a 10 year date range.

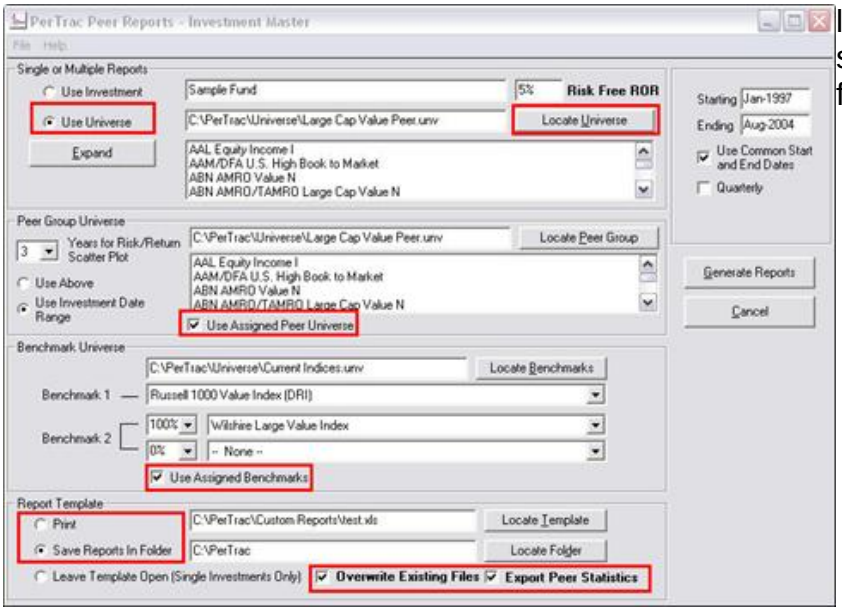
TIP: If you elect to run the report **Quarterly** by checking that option, you must select the MasterStyleReportQuarterly Excel template.

6. The last step is to click the **Generate Reports** button. This will open the report in Excel. The report will be a read only file, which means you will have to save the generated report with a different name. For example you might want to save the file with the report date in the file name.

TIP: You may make formatting changes to the report prior to saving. You can add your logo to the report, change the colors, or format the report in any way using Excel's formatting functions. You would then save the template under a new name. This would be your new template, which you could select for future reports Step 4 of this process.

How do I Generate the Peer Analysis Report on a Universe of Funds?

The process for generating Peer Group Reports on a universe of funds is the same as the process listed above for a single fund with the following exceptions:



1. In section 1 of the setup window select the **Use Universe** option.
2. Click **Locate Universe** to select the universe on which the reports will be generated.
3. If the universe contains funds with different strategies or asset classes, and you have assigned specific Peer Groups to the funds in the universe, check the **Use Assigned Peer Universe** option. . If you have not assigned benchmarks the two benchmarks shown in the select benchmark windows will apply to all funds in the universe. Please refer to section 2.13 for instructions on assigning benchmarks.
4. When generating the report on a universe of funds there are two options for outputting the reports: **Print**, which will send the reports to the printer; and **Save Reports in Folder**, which will save the reports in a designated folder.
5. If you would like to overwrite existing reports, select **Overwrite Existing Files.**
6. When you generate the report you can elect to **Export Peer Statistics** which creates a table listing the funds in the peer group universe and their values for each performance measure and statistic in the **Peer Group Report.** To access this data once the report is generated, click **Format\Sheet\Unhide,** on the Excel menu bar. Then select **Peer Group Data** to display this sheet.

TIP: If you choose to save the reports in a folder, click **Locate Folder** to locate the folder where the reports will be saved. The reports will be saved under the names of each of the funds in your universe.

4.09 - PerTrac Publisher – Generate Custom Report

The **Generate Custom Report** option is the first of two powerful PerTrac Publisher custom reporting tools. These reports were designed to give the user tools to create their own custom report templates, which, once created, can be generated at any time on any number of funds. Listed below are some of the benefits of the **Generate Custom Report** option.

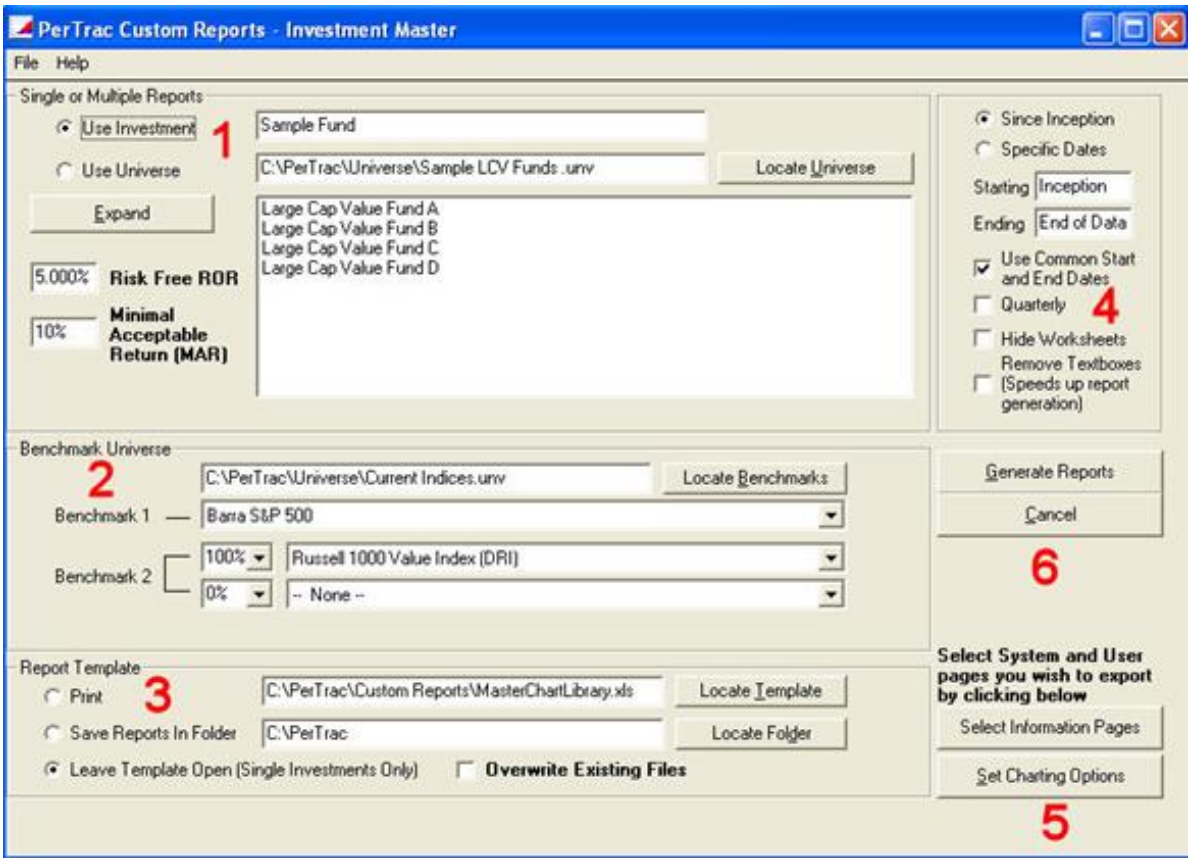
- The report is generated in Excel to give you maximum flexibility when formatting your report. For example, you can add you logo to the report, use color schemes that match your company color schemes, change chart types, etc.
- The export to Excel contains over 1,000 statistics and performance measures, all of the single investment charts that PerTrac calculates, all of the qualitative data from the investment information pages, and pre-built performance and statistics tables. This will give you maximum flexibility with regards to the amount of data contained in your report template.

- The report template can be a simple one page report or comprehensive multi-page report, depending on the amount of exported information you choose to use.
- There are only three Excel functions used to build a template: cut, copy\paste, & copy\paste special\paste link.
- You have access to 15 pre-built templates that can be downloaded from our website and populated with your fund data.

NOTE: The custom report options are designed for a single investment compared to one or two benchmarks only!

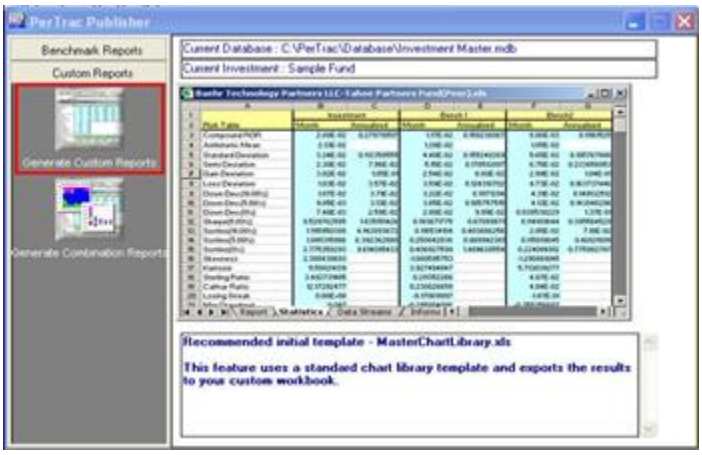
How do I Create a Custom Report?

1. Select a fund you want to use while building your template by highlighting the investment in the PerTrac **Home** window.
2. Click the **Reports** button located on the upper menu bar and select **PerTrac Publisher.**
3. The PerTrac Publisher report selection window will open. On the left hand side you will see two gray buttons, **Benchmark Reports** and **Custom Reports**. Click the **Custom Reports** button. There will be a report icon labeled **Generate**



Custom Report.

To run the report, double click on the **Generate Custom Reports** icon. A gray setup window will appear.


PerTrac Publisher
Benchmark Reports
Custom Reports
Generate Custom Reports
Generate Combination Reports
Current Database : C:\PerTrac\Database\Investment Master.mdb
Current Investment : Sample Fund
Recommended initial template - MasterChartLibrary.xls
This feature uses a standard chart library template and exports the results to your custom workbook.

There are six sections of inputs that must be made prior to generating a **Custom Report**. The sections are numbered on the screenshot above.

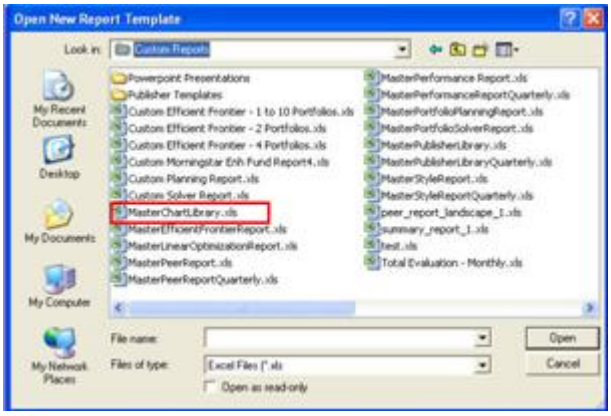
1. **Fund Selection**: the first step is to select the fund to use as your sample fund when creating the report. The **Use Investment** option should be selected on the upper left. If you are generating the report for one fund, and you highlight that fund on the home window prior to opening this setup window, the fund will be automatically listed in the **Use Investment** window.

TIP: If the fund you want to run the report on is not listed in the **Use Investment** window, click **Locate Universe** to open the universe that contains the fund. If the universe contains numerous funds, click the **Expand** button on the left to see an expanded view of the universe. When you find the fund that you want in this list, double-click on it and it will appear in the **Use Investment** window.

2. **Benchmark Selection:** One or two benchmarks may be selected for this report. Click the **Locate Benchmarks** button in the second section to locate the universe containing your benchmarks. This could be the “Correl.unv” universe or any universe of benchmarks you have created. When the universe has been selected, click the **Down Arrow** at the end of the **Benchmark 1** window to select the first benchmark. Then click the **Down Arrow** at the end of the **Benchmark 2** window and select the second benchmark.

NOTE: The second benchmark can be a composite of two benchmarks. Click both **Down Arrows** at the end of each benchmark's selection windows to select the two benchmarks, and then click the **Down Arrows** in the windows to the left of the benchmark names to select the allocations to each benchmark.

3. **Template Selection:** Click **Locate Template**. The custom reports folder will appear with a list of Excel template files. Select the **MasterChartLibrary.xls** file.

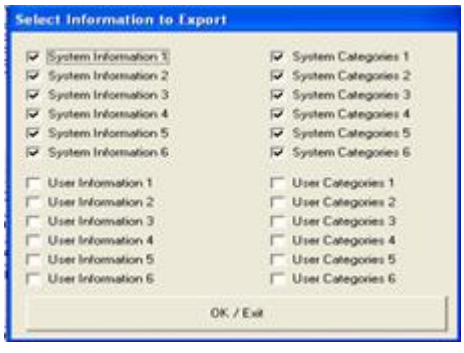


TIP – At this point, no custom report has been created. Select the Leave Template Open (Single Investments Only) option, which will open the report in Excel when generated. That is where you will start building your report.

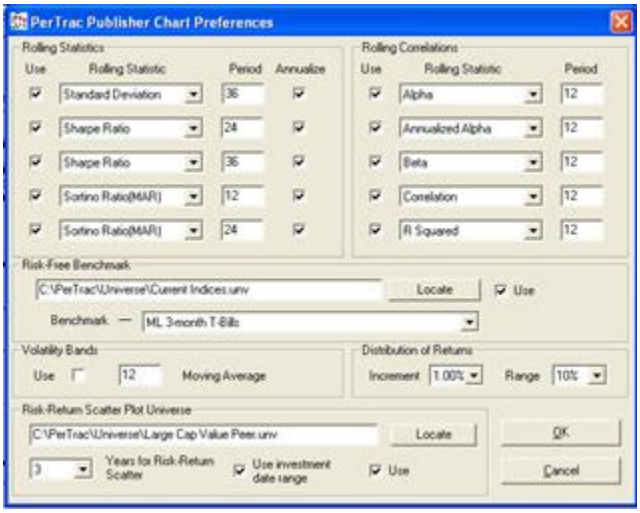
4. **Date Range Selection:** Set your report **Starting** and **Ending** date range. **Since Inception** to **End of Data** are the default settings. When the **Specific Dates** option is selected you can type a start and end date in the **Starting** and **Ending** date boxes. Under the date range option you can elect to **Use Common Start and End Dates** (the common start and end dates for the fund(s) and benchmark(s), to run the report **Quarterly**, **Hide Worksheets** (which is an option to use only after the template has been built), and **Remove Textboxes**.

NOTE – Textboxes are PerTrac's way of exceeding Excel's 256 characters per cell limitation. If you enter large amounts or text in the Investment Information fields, creating text boxes when the data is exported will allow you to include that data on your template by cutting the textbox and pasting it to your template. If you do not need textboxes for your qualitative data, choosing the **Remove Textboxes** option will speed up your report generation.

5. **Select Information Pages** – Click the **Select Information Pages** to select the investment information you want to export into the report.



Set Charting Options – The second option in step 5 is to set your charting options. When creating a custom report you will have access to all of PerTrac's single investment charts. They will be located on the **Library** sheet in the MasterChartLibrary.xls template. Whether some of those charts get populated, and with what data, will be determined by your selections on **Set Charting Options** page.



- **Rolling Statistics -**There are 5 rolling statistics charts. Click the down arrow to select your statistic, and then enter the rolling period.
- **Rolling Correlations -** There are 5 rolling correlation charts. Click the down arrow to select your correlation statistic, and then enter the rolling period.
- The **Risk-Free Benchmark –** This option will allow you to select a benchmark to represent the risk-free rate when calculating the Sharpe Ratio. This in lieu of entering an annualized risk-free rate.
- **Volatility Bands -** Enter the moving average.
- **Distribution of Returns –** For the distribution of returns chart you can set both the **Increments** and **Range** for the graph.
- **Risk-Return Scatter Plot Universe –** There is universe risk-return scatter plot chart on the report's **Library** tab. Use this option to select the universe you want to plot and the number of years to plot.

NOTE – There is a **Use** box for each of the options. The data for that option will not be exported if the box is left unchecked.

6. Click the **Generate Reports**. This will open the report in Excel. The report will be a read only file. You should save the file under a new name prior to building your template. For example you could name the file "Our Company Custom Report Template".

NOTE: There are three output options in section 3 when generating the reports. **Print,** which will send the report directly to the printer; **Save Reports in Folder** which will save the file in a folder of your choosing; **Leave Template Open (Single Investments Only)** which will open the report in Excel when generated.

TIP: There are no limits on the number of templates you can create.

How do I Build The Custom Report Template?

When the steps above have been completed you will have an Excel spreadsheet that contains numerous sheets of data.

TIP – Prior to getting started, click on the **Instructions** sheet to read the template building instructions.

Step 1 – Build the template. The Template sheet shown on the screenshot above, is your blank canvas. This is the starting point. Treat this like a blank sheet of paper. If you are going to create a multiple page report, either insert additional worksheets or build your report vertically down the Template page. Determine whether the report will be Landscape or Portrait. From there start tagging where your qualitative data, statistics, charts and tables will be located. Once you have determined where the data will go, must get the data from the other sheets in the workbook. As mentioned above there are only three basic Excel functions to be used when moving data to your template: Cut\Paste, Copy\Paste, Copy\Paste Special\Paste Link.

- **Library:** This tab contains all of the charts available for the template. Find the chart or charts you wish to include on the template, and then cut and paste them in the appropriate place on your template.

NOTE – The charts **MUST** be cut, not copied. If you copy and paste a chart, the macros will not update when the report is generated in the future.

- **Statistics:** This tab contains over 1,000 statistics and performance measures. If you want to include statistics from this page Copy the cell, or range of cells, and go back to the Template sheet. Click into the cell(s) where the data will be located, then click the Edit button on the menu bar, click Paste Special, then click the Paste Link.
- **Information, Information 2 & Categories:** These sheets contain the qualitative data from the **Investment Information** pages in PerTrac. To include information from these pages you should **Copy, Paste Special & Paste Link** as above.

NOTE: The Information 2 sheet contains the data being exported from the **System and User Information** pages. If you export fields with a lot a text, and you leave the Remove Textboxes option on the setup window unchecked, the data will be exported to individual cell textboxes. To add a text box to your template, **Cut** it from the **Information 2** sheet and paste it on your template.

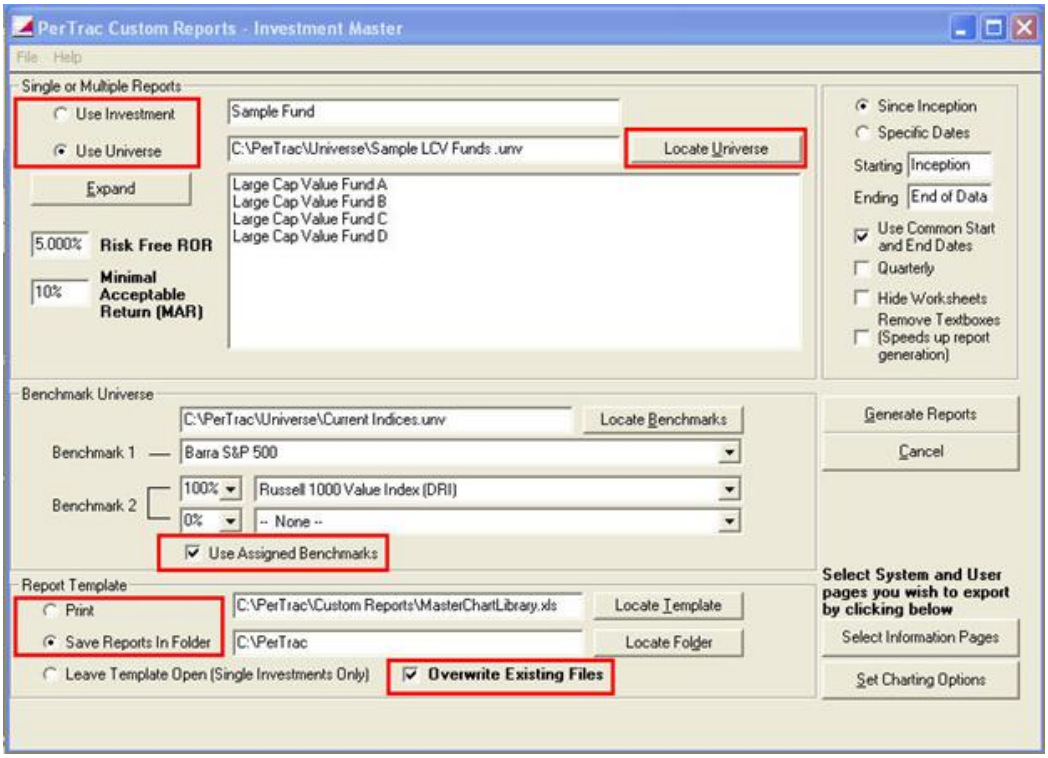
- **Tables:** The **Tables** sheet contains a variety performance and risk statistics tables. To add the tables to you template, **Copy** the table(s) from the **Tables** sheet and **Paste** it on to your template.

TIP: User Data and Leverage Data are available if you enter that information on the appropriate section of the Investment Data window in PerTrac. Further explanation is available in the Instructions sheet in your template workbook.

Step 2 – Format your report. Now that your template has the data, use Excel's formatting capabilities to format the report. Add your company logo, change the colors to reflect your company color schemes, add headers, add disclaimers and then **Save** the template.

Step 3 – Generate the report. Follow the instructions listed above to generate your report, substituting your new template for the MasterChartLibrary.xls template.

How do I Generate My Custom Template on a Universe of Funds?



The process for generating your custom template on a universe of funds is the same as the process listed above for a single fund with the following exceptions:

1. In section 1 of the setup window select the **Use Universe** option.
2. Click the **Locate Universe** to select the universe of funds on which the reports will generated.
3. If the universe contains funds with different strategies or asset classes, and you have assigned specific benchmarks to the funds in the universe, check the **Use Assigned Benchmarks** option. This will insure your funds are compared to the appropriate benchmarks when the reports are generated. If you have not assigned benchmarks the two benchmarks shown in the select benchmark windows will apply to all funds in the universe. Please refer to section 2.13 for instructions on assigning benchmarks.
4. When generating the report on a universe of funds there are two options for outputting the reports: **Print**, which will send the reports to the printer; and **Save Reports in Folder**, which will save the reports in a designated folder.
5. If you would like to overwrite existing reports, select **Overwrite Existing Files.**

TIP – If you elect to save the reports in a folder, click **Locate Folder** to locate the folder where the reports will be saved. The reports will be saved under the names of each of the funds in your universe.

4.10 - PerTrac Publisher – Generate Combination Report

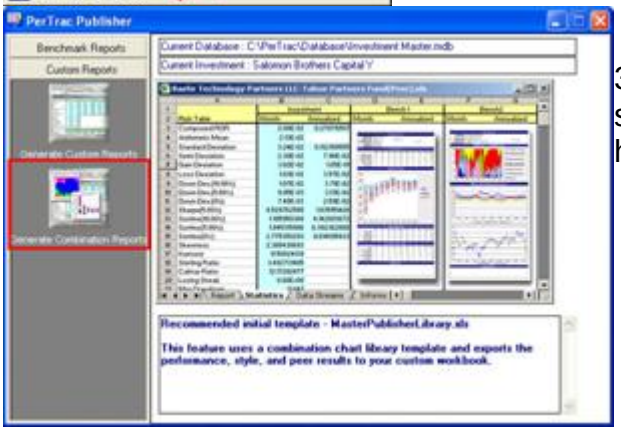
The **Generate Combination Report** option is the second of the two powerful PerTrac Publisher custom reporting tools. This report output is similar to the **Generate Custom Report** output; however this report contains more charts, tables and statistics. The **Generate Combination Report** template contains all of the data the **Generate Custom Report** contains, as well as charts and tables from the three **Benchmark Reports**: **Performance Measurement Report, Style Analysis Report and the Peer Group Report.**

- The report is generated in Excel to give you maximum flexibility when formatting your report. For example, you can add you logo to the report, use color schemes that match your company color schemes, change chart types, etc.
- The report contains over 1,000 statistics and performance measures, all of the single investment charts that PerTrac calculates, all of the qualitative data from the investment information pages, and pre-built performance and statistics tables. In addition this report includes the charts and tables from the three **Benchmark Reports: Performance Measurement Report, Style Analysis Report and the Peer Group Report.**
- The report template can be as simple as a one page report or a comprehensive multi-page report.
- There are only three Excel functions you need to know to build your template: **cut, copy\paste, & copy\paste special\paste link**.
- You have access to 15 pre-built templates that can be downloaded from our website and populated with your fund data, or used as the basis for a custom report.

NOTE: The custom report options are designed for a single investment compared to one or two benchmarks only!

How do I Create a Combination Report?

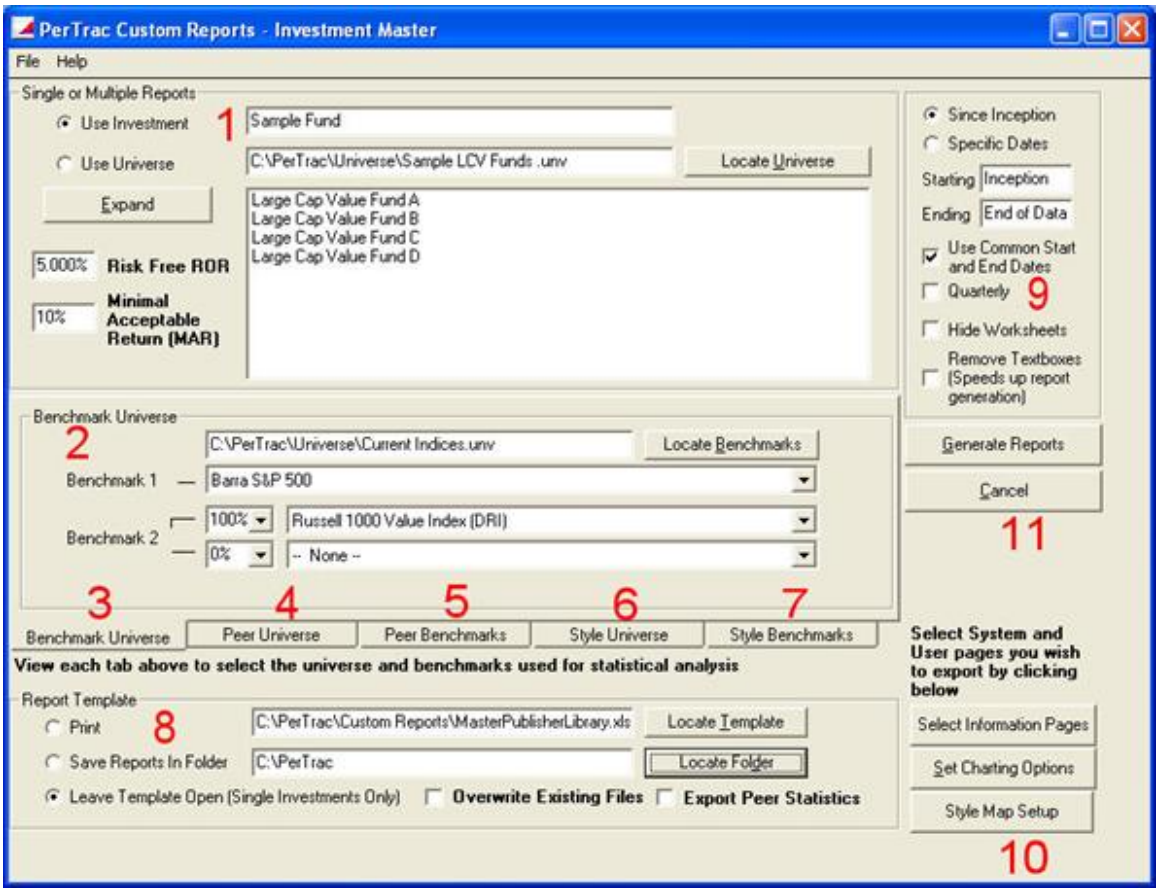
1. Select a fund you want to use while building your template by highlighting the investment in the PerTrac **Home** window.
2. Click the **Reports** button located on the upper menu bar and select **PerTrac Publisher.**



3. The PerTrac Publisher report selection window will open. On the left hand side you will see two gray

buttons, **Benchmark Reports** and **Custom Reports**.

Click the **Generate Combination Report** button. There will be a report icon labeled **Generate Custom Report.**



To run the report, double click your left mouse button on the **Generate Combination Reports** icon. A gray setup window will appear.

This report contains the data from the three **Benchmark Reports,** so the report generation setup window is a little more complex. There are 11 sections of inputs that must be made prior to generating the **Combination Report** option. The sections are numbered on the screenshot above.
1. **Fund Selection**: the first step is to select the fund to use as your sample fund when creating the report. The **Use Investment** option should be selected on the upper left. If you are generating the report for one fund, and you highlight that fund on the home window prior to opening this setup window, the fund will be automatically listed in the **Use Investment** window.

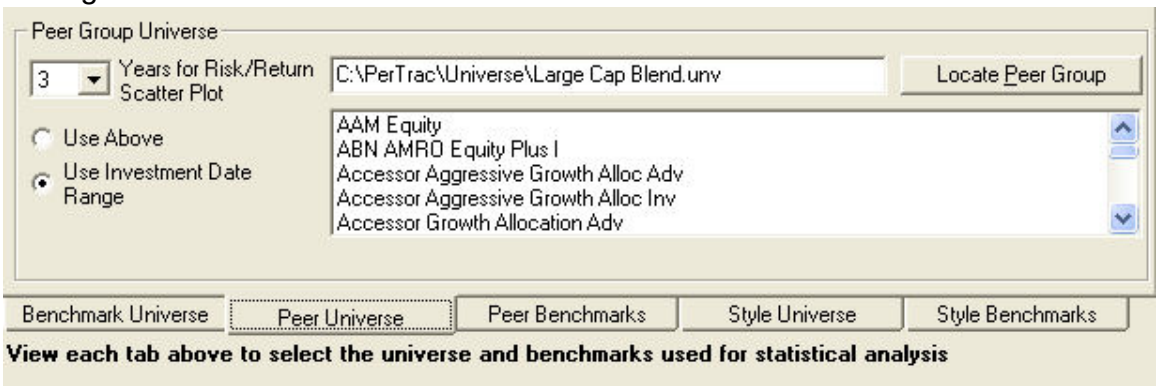
TIP: If the fund you want to run the report on is not listed in the **Use Investment** window, click **Locate Universe** to open the universe that contains the fund. If the universe contains numerous funds, click the **Expand** button on the left to see an expanded view of the universe. When you find the fund that you want in this list, double-click on it and it will appear in the **Use Investment** window.

2. **Benchmark Selection:** One or two benchmarks may be selected for this report. Click the **Locate Benchmarks** button in the second section to locate the universe containing your benchmarks. This could be the "Correl.unv" universe or any universe of benchmarks you have created. When the universe has been selected, click the **Down Arrow** at the end of the **Benchmark 1** window to select the first benchmark. Then click the **Down Arrow** at the end of the **Benchmark 2** window and select the second benchmark.

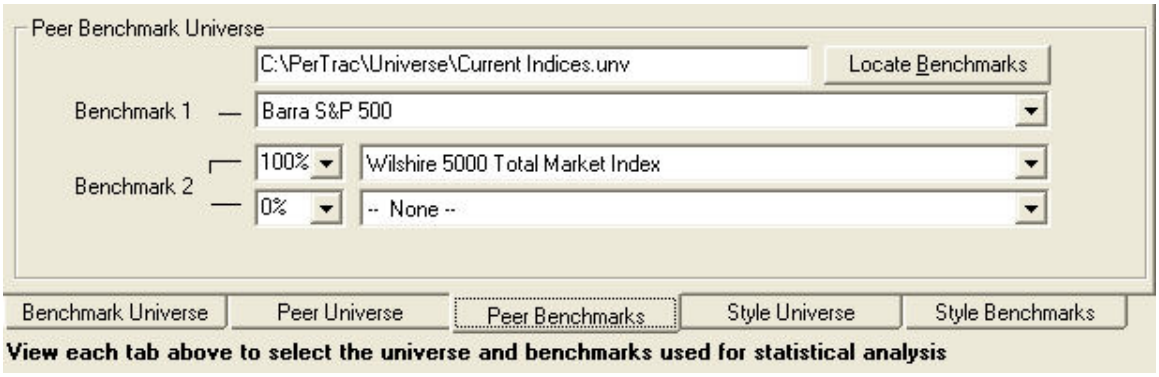
NOTE: The second benchmark can be a composite of two benchmarks. Click both **Down Arrows** at the end of each benchmark's selection windows to select the two benchmarks, and then click the **Down Arrows** in the windows to the left of the benchmark names to select the allocations to each benchmark.

3. **Benchmark Universe:** Click on this tab to select the benchmarks explained in Section 2 (**Benchmark Selection**).

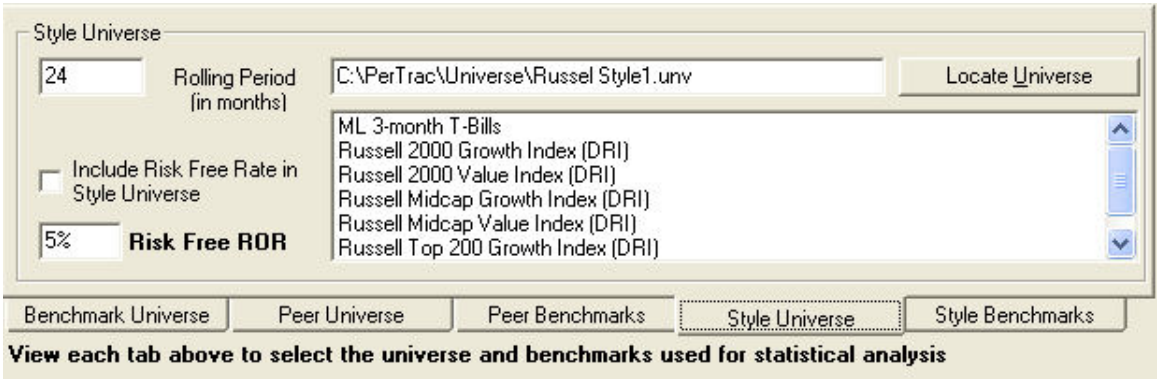
4. **Peer Universe:** Click **Locate Peer Group** to select the peer universe to which your fund will be compared to for the peer analysis charts and tables. On the left side of the window, click the down arrow to select the number of years for the peer risk/return scatter plot chart. **Use Investment Date Range** is the default setting.



5. **Peer Benchmarks:** Click this tab to select the benchmarks for the peer analysis charts and tables.

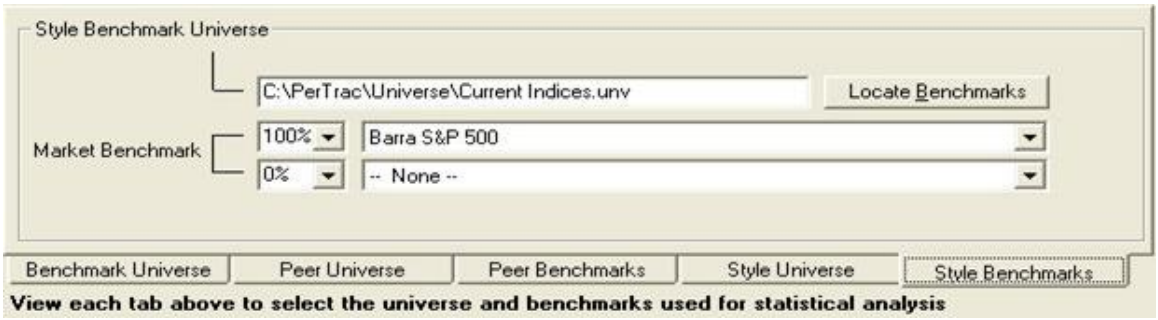


6. **Style Universe:** Click the **Locate Universe** button to select the universe of benchmarks for style analysis.

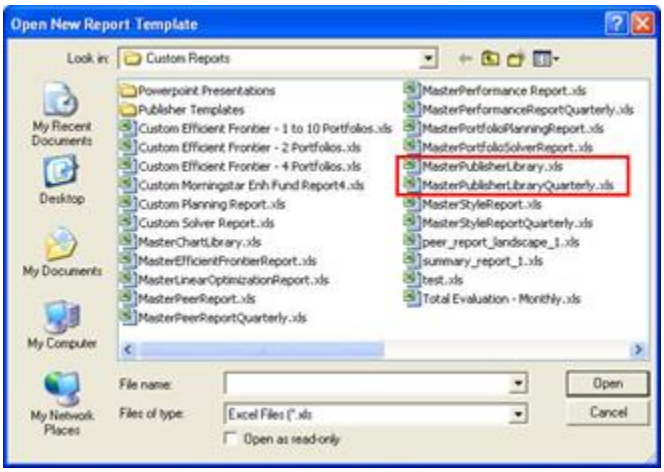


TIP: Rather than using the **Include Risk Free Rate** option to represent cash, you could add a cash investment (i.e. ML 3-Month T-Bills) to the style universe to represent the cash component. You do want to enter a risk free return in the **Risk Free ROR**, which will be used for the Sharpe Ratio, Sortino Ratio and Downside Deviation statistics.

7. **Style Benchmarks:** There will be two comparative benchmarks on this report. The **Style Benchmark,** which will be created as a result of the style analysis regression, and a **Market Benchmark**. To select the **Market Benchmark** click the **Locate Benchmarks** button in section three. This could be the "Correl.unv" universe or any universe of benchmarks you have created. When the universe has been selected, click the **Down Arrow** at the end of the **Market Benchmark** window to select the benchmark.



8. **Template Selection:** Click **Locate Template**. The custom reports folder will appear with a list of template files. There are two files for this report. The **MasterPublisherLibrary,** designed for funds with monthly return streams, and the **MasterPublisherLibraryQuarterly** designed for funds with monthly or quarterly return streams. There are three output options in section 8 when generating the reports.



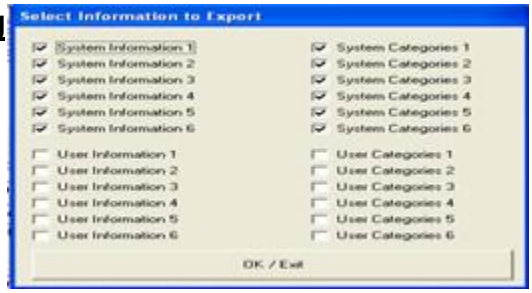
Print, which will send the report directly to the printer; **Save Reports in Folder,** which will save the file in a folder of your choosing; **Leave Template Open (Single Investments Only)** which will open the report in Excel.

TIP: At this point, no custom report has been created. Select the Leave Template Open (Single Investments Only) option, which will open the report in Excel when generated. That is where you will start building your report.

9. **Date Range Selection:** Set your report **Starting** and **Ending** date range. **Since Inception** to **End of Data** are the default settings. When the **Specific Dates** option is selected you can type a start and end date in the **Starting** and **Ending** date boxes. Under the date range option you can elect to **Use Common Start and End Dates** (the common start and end dates for the fund(s) and benchmark(s), to run the report **Quarterly**, **Hide Worksheets** (which is an option to use only after the template has been built), and **Remove Textboxes**.

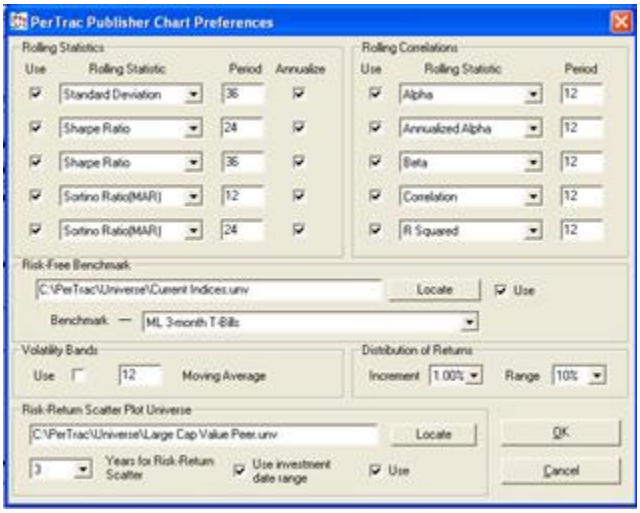
NOTE: Textboxes are PerTrac's way of exceeding Excel's 256 characters per cell limitation. If you enter large amounts or text in the Investment Information fields, creating text boxes when the data is exported will allow you to include that data on your template by cutting the textbox and pasting it to your template. If you do not need textboxes for your qualitative data, choosing the **Remove Textboxes** option will speed up your report generation.

10. **Select Information Pages, Set Charting Options, Style Map Setup:** These three tabs will determine the amount of qualitative data that PerTrac exports, the statistics for certain charts, and style mapping for style analysis charts.



Select Information Pages – Click **Select Information Pages** to select the investment information you wish to export when the report is generated. Click on each of the System and User information/categories that you want to export.

Set Charting Options – When creating your custom report you will have access to all of the PerTrac single investment charts. They will be located on the **Library** sheet in the MasterChartLibrary.xls template. The selections you make on the **Set Charting Options** tab will determine whether some of those charts get populated, and with what data.



- **Rolling Statistics -**There are 5 rolling statistics charts. Click the down arrow to select your statistic, and then enter the rolling period.
- **Rolling Correlations -**There are 5 rolling correlation charts. Click the down arrow to select your correlation statistic, and then enter the rolling period.
- The **Risk-Free Benchmark -** Option will allow you to select a benchmark to represent the risk-free rate when calculating the Sharpe Ratio. This in lieu of entering an annualized risk-free rate.
- **Volatility Bands -** Enter the moving average.
- **Distribution of Returns –** For the Distribution of Returns chart you can set the **Increments** and **Range**.

- **Risk-Return Scatter Plot Universe –** There is universe risk-return scatter plot chart on the report's **Library** tab. Use this option to select the universe you want to plot and the number of years to plot.

NOTE: There is a **Use** box for each of the options. The data for that option will not be exported if the box is left unchecked.

Style Map Setup – Use this tab to setup the **Style Map-Dominant** and **Style Map-Traditional** style analysis charts. Use the down arrows at the end of each option to select the appropriate benchmark. The **MasterPublisherLibrary.xls** files also contain **Style Map-Dominant and Style Map-Traditional** charts designed for a universe of funds. There is an option on the lower left of the setup window to elect to **Use Multiple Style Universe.** If this option is checked, **Locate** next to that window to select the universe of funds to be plotted on the chart.

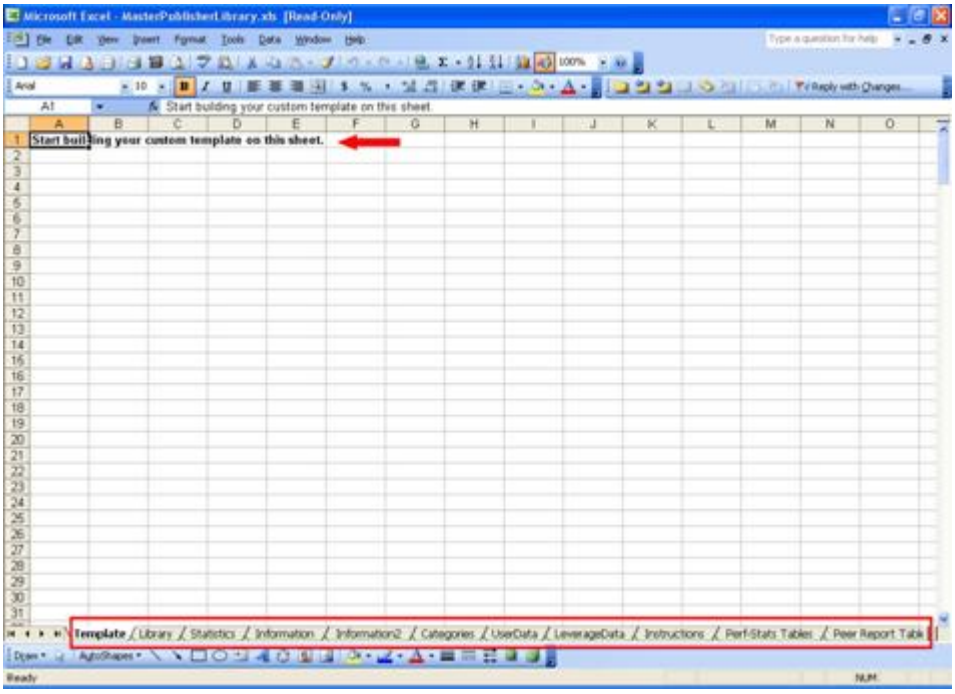
NOTE: The chart is designed to plot five funds only. If your universe contains more than five investments, only the first five will be plotted on the chart.

11. Click **Generate Reports**. This will open the report in Excel. The report will be a read only file. You should save the file under a new name prior to building your template. For example you could name the file "Our Company Custom Report Template".

TIP: There are no limits on the number of templates you can create.

4.11 - How do I Build a Custom Report Template?

When the steps above are completed you will have an Excel spreadsheet. MasterPublisherLibrary.xls – READ ONLY. This Excel file contains numerous sheets of data. The only difference between the **MasterPublisherLibrary.xls** and the **MasterChartLibrary.xls** are the number of sheets in the workbook. The Combination Report includes the performance, peer group and style analysis report data.



TIP: Prior to getting started click on the **Instructions sheet to read the template building instructions or view our online tutorials.** PerTrac Publisher Tutorials

Step 1 – Build the template. The Template sheet shown on the screenshot above, is your blank canvas. This is the starting point. Treat this like a blank sheet of paper. If you are going to create a multiple page report, either insert additional worksheets or build your report vertically down the Template page. Determine whether the report will be Landscape or Portrait. From there start tagging where your qualitative data, statistics, charts and tables will be located. Once you have determined where the data will go, must get the data from the other sheets in the workbook. As mentioned above there are only three basic Excel functions to be used when moving data to your template: Cut\Paste, Copy\Paste, Copy\Paste Special\Paste Link.

- **Library:** This tab contains all of the charts that PerTrac exported, including the **Peer Group** and **Style Analysis** Report charts. Find the chart or charts you wish to include on the template and cut and paste them where you would like them to appear.

NOTE: The charts **MUST** be cut, not copied. If you copy and paste a chart, the macros will not update when the report is generated in the future.

- **Statistics:** This tab contains over 1,000 statistics and performance measures. If you want to include statistics from this page Copy the cell, or range of cells, and go back to the Template sheet. Click into the

cell(s) where the data will be located, then click the Edit button on the menu bar, click Paste Special, then click the Paste Link.

- **Information, Information 2 & Categories:** These sheets contain the qualitative data from the **Investment Information** pages in PerTrac. To include information from these pages you should **Copy, Paste Special & Paste Link** as above.

NOTE: The Information 2 sheet contains the data being exported from the **System and User Information** pages. If you export fields with a lot a text, and you leave the Remove Textboxes option on the setup window unchecked, the data will be exported to individual cell textboxes. To add a text box to your template, **Cut** it from the **Information 2** sheet and paste it on your template.

- **Perf-Stats Table:** the **Perf-Stats Tables** sheet contains a variety performance and risk statistics tables. To add the tables to you template, **Copy** the table(s) from the **Tables** sheet and **Paste** it on to your template.

TIP: User Data and Leverage Data are available if you enter that information on the appropriate section of the Investment Data window in PerTrac. Further explanation is available in the Instructions sheet in your template workbook.

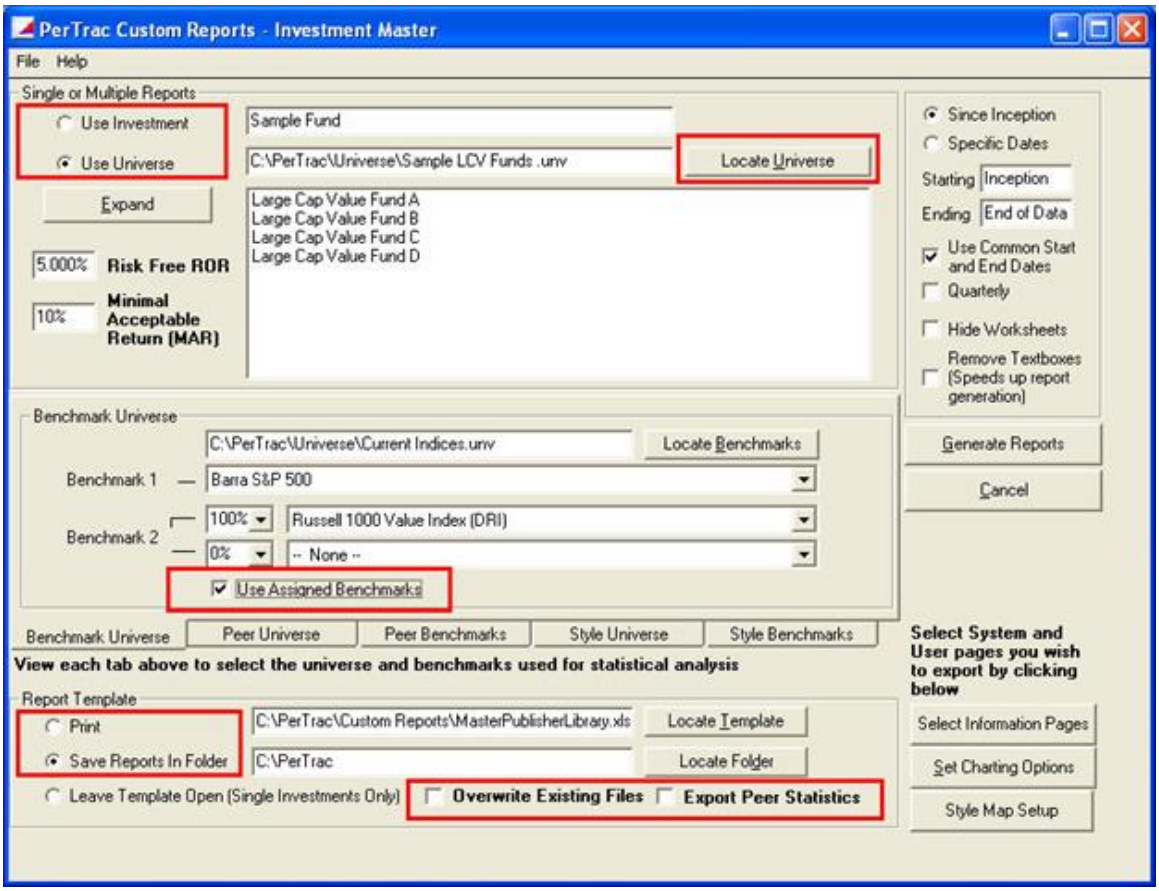
- **Peer Report Tables:** This sheet contains the data tables for the **Peer Group** charts on the **Library** sheet. To add these tables to your report, **Copy** the table, and **Paste** it on to your template.
- **Style Report Tables:** This sheet contains the data tables for the **Style Analysis** charts on the **Library** sheet. To add these tables to your report, **Copy** the table, and **Paste** it on to your template.

Step 2: Format your report. Now that your template has the data, use Excel's formatting capabilities to format the report. Add your company logo, change the colors to reflect your company color schemes, add headers, add disclaimers and then **Save** the template.

Step 3: Generate the report. Follow the instructions listed above to generate your report, substituting your new template for the MasterChartLibrary.xls template.

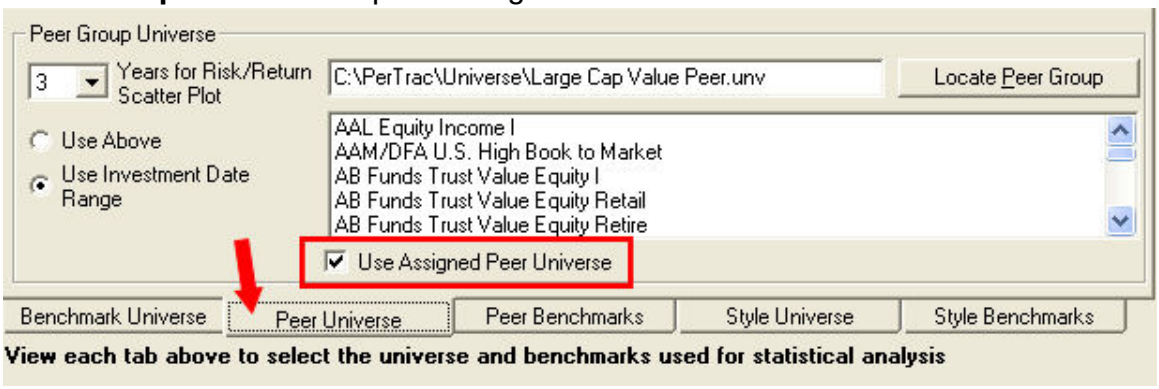
4.12 - How do I Generate My Custom Template on a Universe of Funds?

The process for generating your custom template on a universe of funds is the same as the process listed above for a single fund with the following exceptions:



1. In section 1 of the setup window select the **Use Universe** option.
2. Click the **Locate Universe** to select the universe of funds on which the reports will generated.
3. If the universe contains funds with different strategies or asset classes, and you have assigned specific benchmarks to the funds in the universe, check the **Use Assigned Benchmarks** option. This will insure your funds are compared to the appropriate benchmarks when the reports are generated. If you have not assigned benchmarks the two benchmarks shown in the select benchmark windows will apply to all funds in the universe. Please refer to section 2.13 for instructions on assigning benchmarks.
4. When generating the report on a universe of funds there are two options for outputting the reports: **Print**, which will send the reports to the printer; and **Save Reports in Folder**, which will save the reports in a designated folder.
5. If you would like to overwrite existing reports, select **Overwrite Existing Files.**

6. When you generate the report you can elect to **Export Peer Statistics** which will create a table listing the funds in the peer group universe and their values for each performance measure and statistic in the **Peer Group Report.** To access this data when the report is generated, click **Format\Sheet\Unhide,** on the Excel menu bar. Then select **Peer Group Data** to unhide this sheet.
7. If the universe contains funds with different strategies or asset classes and you have included the **Peer Group** charts in your template, and have assigned specific Peer Group Universes to your funds, check the **Use Assigned Benchmarks** option. This will insure your funds are ranked in the appropriate **Peer Groups** when the reports are generated.


Peer Group Universe
3
Years for Risk/Return Scatter Plot
C:\PerTrac\Universe\Large Cap Value Peer.unv
Locate Peer Group
Use Above
Use Investment Date Range
AAL Equity Income I
AAM/DFA U.S. High Book to Market
AB Funds Trust Value Equity I
AB Funds Trust Value Equity Retail
AB Funds Trust Value Equity Retire
Use Assigned Peer Universe
Benchmark Universe
Peer Universe
Peer Benchmarks
Style Universe
Style Benchmarks
View each tab above to select the universe and benchmarks used for statistical analysis

TIP – If you elect to save the reports in a folder, click **Locate Folder** to locate the folder where the reports will be saved. The reports will be saved under the names of each of the funds in your universe.

4.13 - How do I Generate the Pre-Contructed Publisher Report Templates?

The sections above walk you through the process of creating your own custom templates with the **Generate Custom** and **Generate Combination Reports** options. You also have access to 15 pre-constructed one-page templates that can be downloaded from the PerTrac support site. To view the templates within PerTrac, click the **Help** tab on the menu bar. Then select **Download Updates**. This will take you directly to the PerTrac main support page.

When the support site opens, click the **PerTrac Publisher Templates** link on the upper left navigation bar. A form will appear prompting you to enter your name, e-mail address and license number.

Please log in to continue.
All fields must be completed in order to download the requested file(s).
Name:
E-mail:
License Number*:
* Your license number may be found by selecting About PerTrac from the Help menu in the PerTrac program.
Submit Form
Reset Form

TIP: If you don't know your license number, click the **Help** tab in PerTrac and select **About PerTrac.** There will be an alpha-numeric license number located on the left side of the window.

When all information has been entered, click **Submit Form**. The following window will appear.

TIP – There are 5 rows of reports with 3 reports in each row. To the left of each row you will find a brief description of the data contained in the reports in that row. To view a full-sized screenshot of a report, click on the report thumbnail.

Step 1: Downloading the Reports. Under each of the thumbnails you will see two links. You should select **Custom Report**, if you wish to generate the report with the PerTrac Publisher **Generate Custom Reports** option. If you wish to use PerTrac Publisher **Generate Combination Reports** to generate the template, select **Combination Report**.

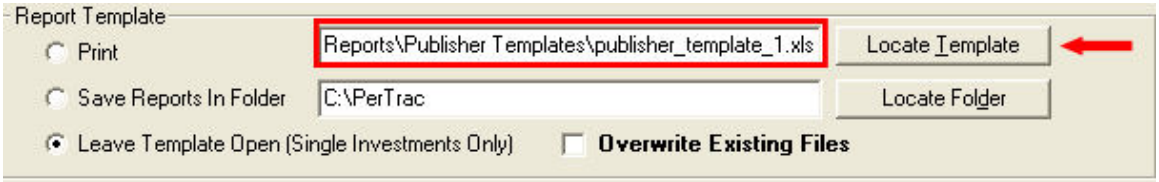
NOTE: The template files are quite large and have been compressed with WinZip.

Click on the **Custom Report** link. A file download window will appear. The file name is listed in this window. Click **Save** to download this file to your desktop. After the file is downloaded, locate the file and double click on it to launch

WinZip. Extract the file to the **PerTrac\Custom Reports** folder, or some other folder that you have created for your report templates.

TIP: If you are using Windows XP, click the **Open** button when the file download window appears to view the Excel file. Then use the **Extract** or **Copy** options to move the file to the **PerTrac\Custom Reports** folder.

Step 2: Generating the Reports. Refer to the section on **Generate Custom Reports** above for instructions on generating these pre-constructed reports. When you get to section three of the instructions, click **Locate Template**, and rather than selecting the **MasterChartLibrary.xls** file, select the template you downloaded from the website. Use this same process if you are generate the report with the **Generate Combination Report** option.



Step 3: Formatting & Saving the Report. Now that your template has the data, use Excel's formatting capabilities to format the report. Add your company logo, change the colors to reflect your company color schemes, add headers, add disclaimers and then **Save** the template.

PerTrac Publisher Tips & Tricks:

PerTrac Publisher Custom & Combination Reports: Select Information Pages, Set Charting Options and Style Map Setup options.

PerTrac Publisher, has two custom report options, "Generate Custom Reports" and "Generate Combination Reports". These two reports are Excel workbooks that contain a large amount of PerTrac data on numerous worksheets within the workbook. There is a **Library** tab in both workbooks which contains all of the single investment charts available in PerTrac. Whether or not some of these charts get populated, and with what data, depends on the choices made prior to running the report. Both reports also contain an **Information and Information2** worksheet that contains the investment qualitative data exported from PerTrac. The qualitative information available for your template will also be determined by selections you make prior to running the report. In addition to the single investment charts and investment qualitative information, the "Generate Combination Report" also contains style analysis charts that also require a setup prior to running the report.

When you double click the publisher report icon to run either the “Generate Custom Report” or the “Generate Combination Report” a gray input window appears where the user selects the fund(s) and benchmarks for the report. This sheet also contains two options for the Custom Report, three for the Combination Report, that are often overlooked prior to running the report. The Custom Report input sheet contains two buttons at the lower right, Select Information Pages and Set Charting Options. The Combination Report input sheet contains those two options and a third button labeled Style Map Setup. We frequently receive calls indicating that the client’s report contains no qualitative data or that some of the charts are blank.

TIP: Prior to running the reports click on each of these options to select the data you wish to have exported. The Select Investment Pages button will allow you to select the System and User qualitative information to be exported. The Set Charting Options tab contains a number of selections for charts on the Library tab which include, rolling statistics, rolling correlations, the selection of a Risk-Free benchmark for the Sharpe calculation found on the template Statistics tab, Volatility Bands, Distribution of Return’s chart increments and range, and universe selection for the universe risk/return scattergram chart. The Combination Report input sheet contains a third button “Style Map Setup”. This option will allow you to setup up the benchmarks for the “Style Map – Traditional” and “Style Map – Dominant” style analysis charts.

PerTrac Reports (Universe Reports)

4.14 - PerTrac Reports - View the online tutorial!

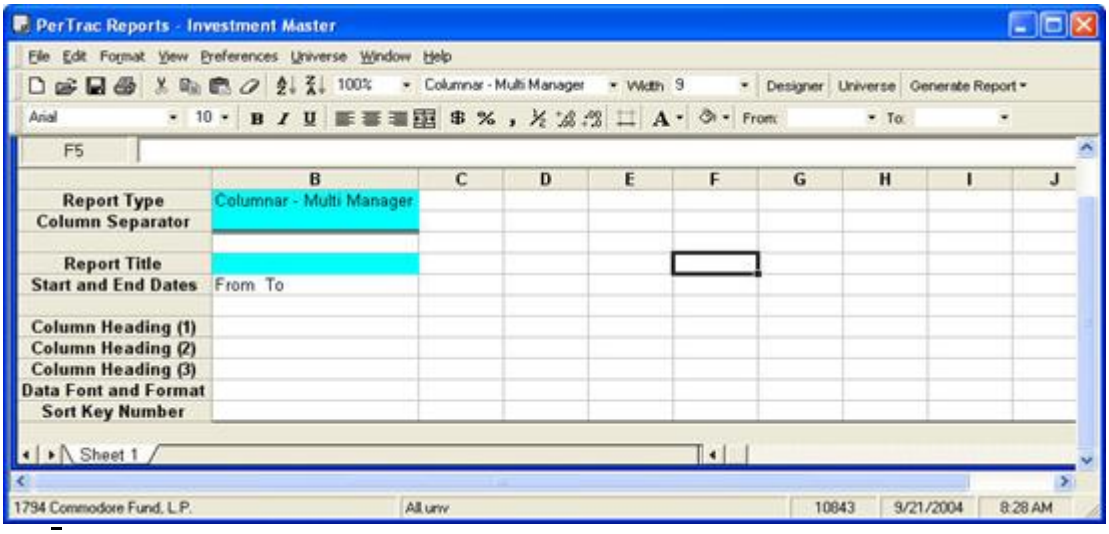
PerTrac Reports is a powerful universe (multi-fund) level report generator. You can create an unlimited variety of custom reports by selecting qualitative information or performance and statistical data. You have access to all of the qualitative investment information fields the data vendors supply, as well as every performance measure and statistic that PerTrac calculates. You can generate reports on up to every investment in your database at one time. With PerTrac Reports, you can also create templates that generate identical reports on a periodic basis for continuing analysis and presentation. The following steps will walk you through creating a report template and generating the report.

Step 1: Open PerTrac Reports - In the PerTrac **Home** window click the **Reports** tab located on the upper menu bar. Then select **PerTrac Reports.** PerTrac Reports will open as a separate program from PerTrac.

NOTE: When you launch PerTrac Reports for the first time you will be prompted, as you were with PerTrac, to select an active database.

TIP – This is a universe-level report generator. As such, the database in which the universe was created **must** be opened. If you have a database open in PerTrac Reports, and attempt to generate a report on a universe of investments not in that database, PerTrac Reports will indicate that you have made an error. To open the correct database, click on **File** and select **Open New Database**.

When **PerTrac Reports** is first opened, the **Main Window** appears.



Preliminary Settings

Selecting a Database

Selecting **Open New Database** from the **File** menu opens the **Select Active Database Window**, where you can find the database you wish to use. Selecting **Default Database** from the **Preferences** menu also opens the **Select Active Database Window** and allows you to choose which database opens automatically when PerTrac Reports starts.

Selecting a Universe

Selecting **Change Universe** from the **Universe** menu opens the **Select New Universe Window**. You can also select a default universe by selecting **Default Universe** from the **Preferences** menu.

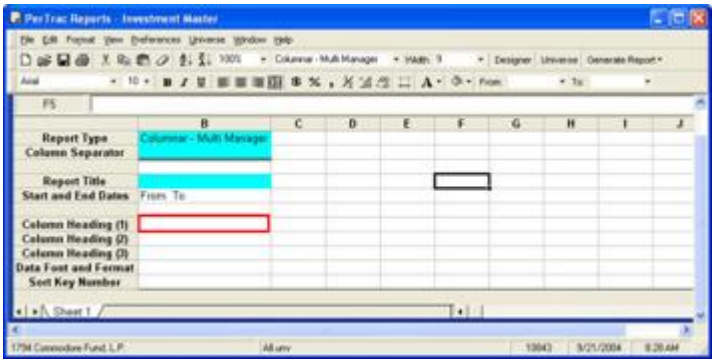
Default Data Source

Each data source uses its own set of field labels. When using PerTrac Reports, you can select which set of field labels you wish to use by selecting **Default Data Source** from the **Preferences** menu.

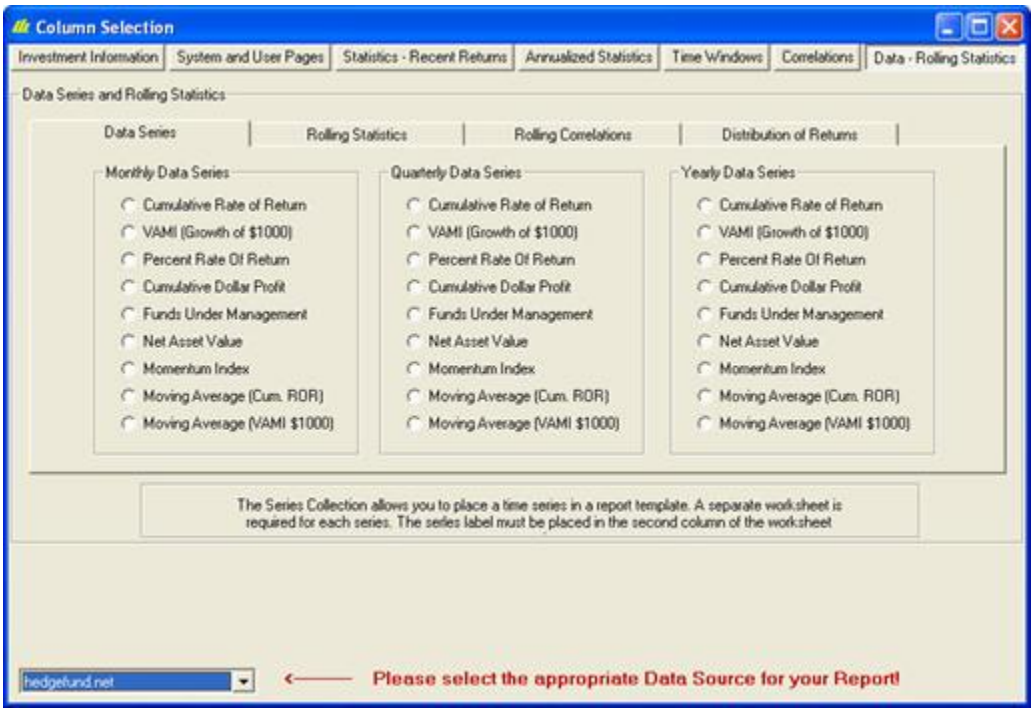
Risk Free Return & Minimal Acceptable Return

Certain statistics make use of variables that you can re-define to best suit your needs. Selecting **Default Risk Free and Minimal Acceptable Return** from the **Preferences** menu opens the **Default Returns Window**. For the downside deviation and Sortino ratio calculations, enter an annualized Minimal Acceptable Return. Enter an annualized risk free rate for Sharpe ratio calculations.

Step 2: Creating the Template - PerTrac Reports uses templates to generate reports. You select the qualitative or quantitative criteria for the report template column by column. The selection process begins in column B in the empty cell to the right of the label Column Heading (1). Double left click in this empty cell.



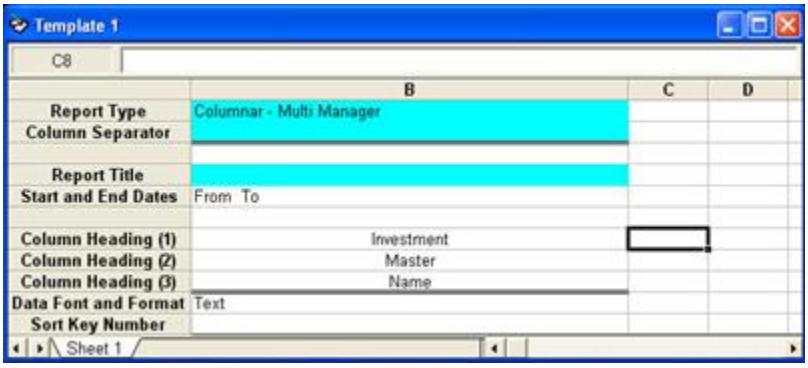
The **Column Selection window will appear.**

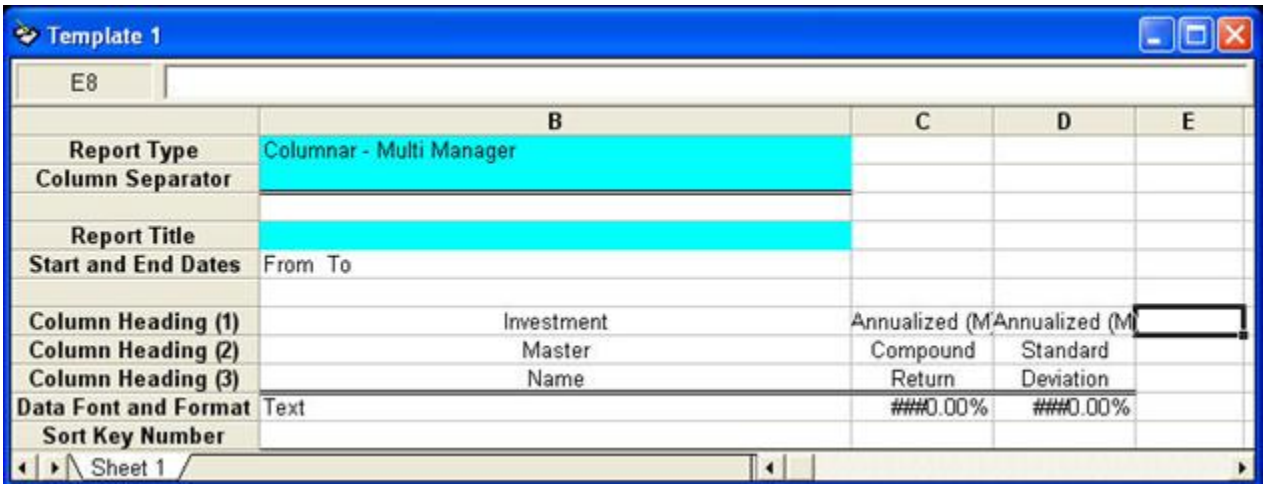

Column Selection
Investment Information
System and User Pages
Statistics - Recent Returns
Annualized Statistics
Time Windows
Correlations
Data - Rolling Statistics
Data Series and Rolling Statistics
Data Series
Rolling Statistics
Rolling Correlations
Distribution of Returns
Monthly Data Series
Quarterly Data Series
Yearly Data Series
Cumulative Rate of Return
VAMI (Growth of $1000)
Percent Rate Of Return
Cumulative Dollar Profit
Funds Under Management
Net Asset Value
Momentum Index
Moving Average (Cum. ROR)
Moving Average (VAMI $1000)
The Series Collection allows you to place a time series in a report template. A separate worksheet is required for each series. The series label must be placed in the second column of the worksheet
hedgefund.net
Please select the appropriate Data Source for your Report!

There are 7 main tabs across the top. Each main tab contains numerous sub-tabs. The Investment Information & System and User Pages contain the qualitative investment information, which, as you know, changes depending on the data source. You can change the source by clicking the down arrow in the lower left corner of the Column Selection window. The Statistics-Recent Returns, Annualized Returns, Time Windows, Correlations and Data-Rolling Statistics tabs contain the performance measures and statistics that PerTrac calculates.

In column B select the **Investment Master Name** as your first field. This will display the names of the funds in your universe in the first column when the report is generated. After you select that option, you will return to the template window with the Investment Master Name label now shown in column B.

Double click in column C to open the Column Selection window again to select your next field. Every time you select a field label it will be displayed in the template column and your curser will move to the next column.





NOTE: The maximum number of columns per sheet in the template is 256.

TIP: Working within the template is similar to working with Excel. You can add more sheets to the template to select additional report statistics. Click Edit on the menu bar and select Insert Sheet. In column B of the new sheet select the Investment Master Name as you did on sheet one, and then proceed to column C to add additional statistics to the report.

The labels to the left of Column B will not appear in the report, nor will the information contained in the Report Type or Column Separator rows. These headings serve the following purposes:

- **Report Type –** Shows whether the report will be Columnar or Peer Group Analysis.
- **Column Separator –** Allows you to format the borders that separate the column headings from the column data or information. To change the border, select Border from the Format menu.
- **Report Title –** You can use this space to give your report a name.
- **Start and End Dates –** This cell will display the date range you select in the From and To boxes at the top right of your screen.
- **Column Heading –** These three rows are reserved for the names of the information fields or statistics that you choose to include in your report. Some headings do not use the entire allotted space.
- **Data Font and Format –** Displays the formatting style of the data to be placed in that column.
- **Sort Key Number –** You can use this row to enter sorting instructions that will take effect when you run your report.

Report Type

You must choose between a Columnar Report or a Peer Group Analysis Report. Both reports display statistics and information in a table format. The Peer Group Analysis Report also provides percentile rankings and other statistics that provide a comparison to investments in another universe. Also, the Peer Group Analysis Report creates a chart that plots the peer group values within a percentile bar chart.

Once the report type has been selected from the pull down menu, the name of the selected report will appear next to the Report Type label.

Specifying Date Range

You may then enter a date range for the analysis in the From and To boxes at the top right of your screen. Initially, these boxes will contain the words Start

Date and End Date. Erasing these words and leaving the boxes blank will cause the date ranges to default to “Inception” and “End of Data”, meaning that each investment’s full history will be analyzed. To use a specific range of dates, however, enter the dates in month/year format in the appropriate box. When creating a template for a Peer Group Analysis Report, a specific date range is required.

NOTE: If you have multiple sheets in your template, each sheet can have the same date range or different date range.

Data Series Reports

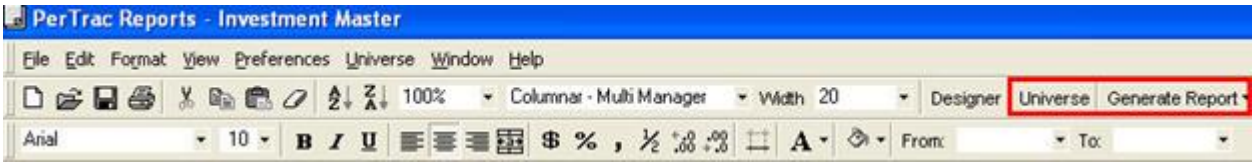
Certain fields in the Column Selection Window represent a series of data that consist of more than one value and therefore require more than one column in which to be displayed. For this reason, all data series must have their own worksheet within a report template. Once you have added a worksheet, as explained above, use Column B to display the investment name and Column C to display the data series (the series will extend to the right as needed).

Sorting Data within a Report

Each column in PerTrac Reports contains a Sort Key Number, which allows you to assign a sorting level to the field. Entering “1” for a column’s Sort Key Number designates that column as the primary sort column. “2” designates a secondary sort column. “3” designates a tertiary sort column, etc. Keep in mind that Sort Key Numbers are not required to run a report. Also, if you place negative sign (-) in front of the Sort Key Number, the sort will be performed in ascending order. Otherwise, the sort will be performed in descending order.

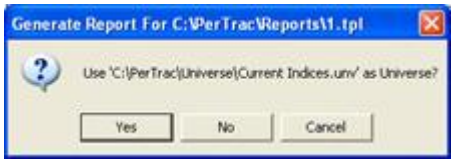
When your template is complete, select Save Template As from the File menu. When the Save as Window opens, select a name for your new template, ensuring it ends with a “.tpl” extension.

Step 3: Running the Report - Now that you have a template, you can create single use or consistent periodic reports using various universes or various databases.



1) If you need to change databases, select Open New Database from the File menu and select the appropriate database.

2) Click Universe on the upper right of the menu bar. The Universe Selection window will open. To select your universe click Open Universe. If you want the report to run on the entire database, click Load Master Database. Once you have selected the universe, you can use the Move Up and Move Down buttons to re-order your universe. If you do choose to change the order of the investments, click Save Universe to save the new order. Click OK to exit this window.



3) Click Generate Report. Select Standard if you want to keep the report in PerTrac Reports format. Select Excel if you want to generate the report in Excel format, which is the more common selection. When you click Generate Report to Excel, a window will appear prompting you to select the universe for which the report will be generated. The default universe in this window is the "All.unv". That universe is your entire database. If you want to generate the report on your entire database click Yes, if not click No. Typically, you will be running the report on a smaller universe than the entire database. When you click No the Universe Selection window will open so you may select a different universe. Select your universe by clicking Open Universe, and then click OK.

TIP: When you select the universe, prior to clicking OK, you can sort the investments in the universe if you wish to send the data to Excel in a certain order.

4) When you have selected your universe click Generate Report . Select Excel to export the report to Excel. The Generate Report window will reappear with the name of the universe you just selected. Click Yes and an Excel Export Setup window will appear. Select Empty Excel Workbook, Leave Excel Open and Format Output. Click Generate Report.

5) When you click Generate Report an Excel workbook will open that contains the report output. Use Excel functions to format, save or print the report.

NOTE: All reports created in PerTrac Reports (not exported to Excel) contain standard formatting, editing, and printing options. Selecting Save Report As from the File menu allows you to save the report for future use. You can edit a report with the Workbook Designer by clicking the Designer button at the top right of your screen (See "Using the PerTrac Workbook Designer" for more information).

Multiple Benchmark Reports

PerTrac Reports features a Multiple Benchmark option, which allows you to simultaneously create a report for an investment universe and each item in a selected benchmark universe.

1. Create a template in PerTrac Reports.
2. Select either Multiple Benchmarks – Standard, or Multiple Benchmarks – Excel from the Generate Report menu.
3. You will be asked to verify that the current universe.
4. When the Select Benchmark Universe window opens, click Select Universe, locate an existing benchmark universe, and click Open.
5. When the Select Benchmark Universe window displays the items in the benchmark universe, click OK. In the future, unless you want to switch benchmark universes, step 4 may be skipped.
6. In addition to the original report, an identical report will be created for each benchmark, using the same date range per row as in the original report.

Style Analysis (Single Fund)

5.01 - Selecting Your Default Style Universe

The style analysis model is a performance (returns) based multiple-regression. The single investment represents the dependent variable and a universe of appropriate benchmarks represent the independent variables.

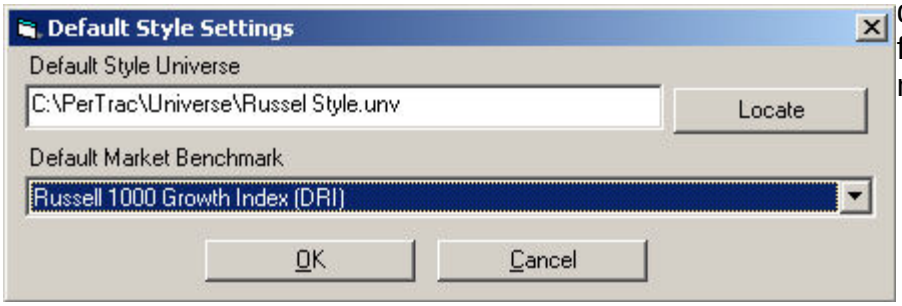
Prior to entering the style analysis module, you must select two default settings: A default style universe and a default market benchmark for comparative analysis.

To select a default style universe, you must first create a style universe or universes. The goal is to select benchmarks that will best explain the style of the investment being analyzed. For instance if you perform style analysis on a U.S. equity manager, you might want to create a style universe of Russell, Wilshire or Barra indices that would include small, mid and large cap value; and small, mid and large cap growth. It is also a good idea to add a cash benchmark to your style universe such as the Merrill Lynch 3-month T-bill. If you perform style analysis on hedge funds, you should select an appropriate universe of hedge fund benchmarks such as the CSFB Tremont or HFRI indices. Again, the goal is to create a style universe that best explains the style of the investment being analyzed.

1. Once you have created a Style Universe, click the **Preferences** tab on the menu bar, click **Style Analysis Options**, and select **Default Style Universe**.
2. When the **Select Default Style Universe Window** opens, locate the desired universe and click **Open**.

5.02 - Selecting Your Default Market Benchmark

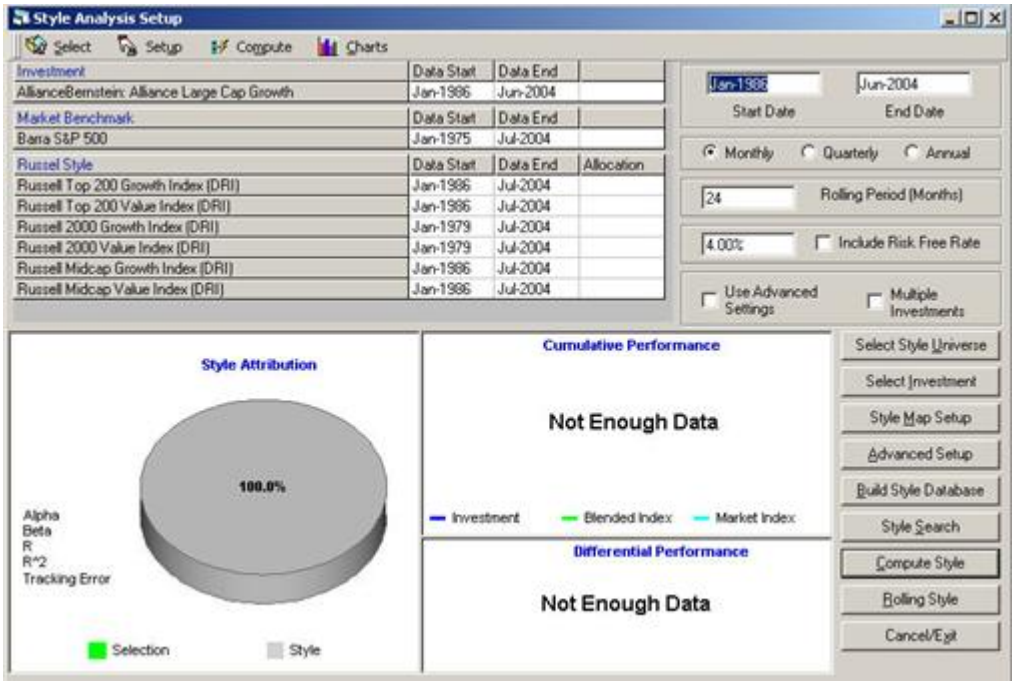
1. Add the Market Benchmark you wish to use to your correlations universe (correl.unv).
2. Click the **Preferences** tab, select **Style Analysis Options**, and select **Default Market Benchmark**.
3. When the **Select Market Benchmark Window** opens, select the desired benchmark from the dropdown menu and click **OK**.



NOTE – Although you are required to set a default benchmark, you may change that benchmark at any time once you have entered the style analysis module.

5.03 - Performing Single Investment Style Analysis - View the online tutorial!

To launch the style module, click the **Style and Benchmark Analysis** tab located on the lower left of the home window.



TIP: You may receive the following error message when the **Style Analysis Setup** window opens: “Error Reading Style Map Setup File – Please set up the style map benchmarks.
Click **OK**. Each Style Universe must have a corresponding Style Map Setup file that PerTrac uses when creating Style Map Dominant and Style Map Traditional charts. This file is created from the **Style Analysis Setup Window**. Please refer to section 5.05 below.

Starting in the upper left of the screenshot above, you will find the name of the selected investment, the name of the selected market benchmark, the benchmarks in your style universe.

To the right of the investment and benchmark names you will see the start and end dates for the investment and benchmarks.

Moving to the upper right you will see the start and end dates for the style analysis. Because we will be performing a multiple regression, the date range will have to be the common date range for the investment and the benchmarks.

You can run style analysis on a monthly, quarterly or annual basis. You can also enter the number of rolling periods to create the rolling style charts.

You may elect to include a risk free rate to represent a cash component. The alternative to using a risk free rate would be to include an index representing a cash investment.

There are a number of buttons down the right hand side of the window:

1. **Select style universe:** Allows you to change the style universe.
2. **Select Investment:** Allows you to select a different investment for style analysis.
3. **Style map setup:** Pertains to the style map dominant charts and must be setup prior to creating those charts
4. **Advanced setup:** Allows you to apply upper and lower bounds to style indexes and define constraints for the sum of the style allocations.
5. **Build a style database:** Allows you to perform style analysis on multiple funds at one time. This function will be covered in the second style analysis tutorial, performing style analysis on multiple funds.
6. **Style Search:** A powerful PerTrac search engine that allows you to search for investments by style. Once the style database has been built, you can search the style database on a number of statistics and style criteria
7. **Compute style:** Computes the style output for a single fund.
8. **Rolling style:** Computes the style characteristics over multiple rolling periods. The number of rolling periods will be entered in the Rolling Period box.
9. **Cancel/Exit.**

5.04 - Style Map Setup

Each style universe must have a corresponding Style Map Setup file that PerTrac uses when creating style map charts. While it is necessary to go through this procedure only once per style universe, changing the name of, or removing investments from your style universe will make it necessary to recreate the Style Map Setup file.

Click the Style Map Setup button from the Style Analysis Setup Window.

1. When the **Style Map Setup Form** opens, select either a 2x2 or a 3x3 map style.

2. Each dropdown menu contains a list of the indexes in your style universe. Depending on your map dimensions, select two to three value indexes for the x-axis and two to three growth indexes for the y-axis.

3. Click **Save**.

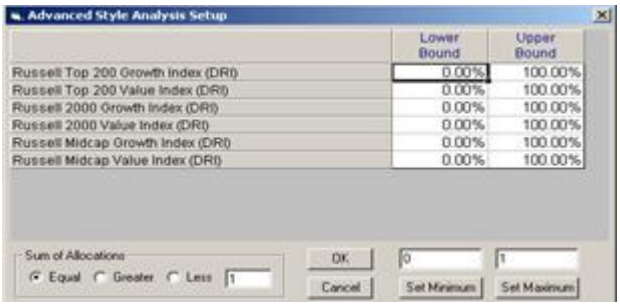
4. When the **Save Window** opens, keep the default file name and click **Save**. PerTrac will store these settings in your Universe folder with an ".smf" extension. With the exception of the extension, the file name must be identical to that of your style universe so it can be recognized by PerTrac.

5.05 - Style Analysis Advanced Setup

The Advanced Setup allows you to apply upper and lower bounds to your indexes, as well as define constraints for the sum of the style allocations.

1. Click **Advanced Setup** from the **Style Analysis Setup Window**.

2. When the **Advanced Style Analysis Setup Window** opens, adjust the upper and lower bounds for each index as needed. You can assign a value to all the indexes at once by entering a percentage in either the **Set Minimum** or **Set Maximum** boxes.



3. In the lower left corner of the window, set the sum of the style allocations to be greater than, less than, or equal to a given number.

4. Click **OK**.

5. Back in the **Style Analysis Setup Window**, ensure that the **Use Advanced Settings** checkbox is checked prior to clicking **Compute Style**.

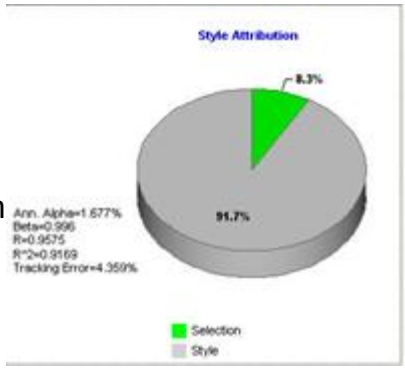
5.06 - Compute Single Investment Style Analysis

Now that the setup is complete, click **Compute Style** to produce the style analysis output. The goal of style analysis is to determine the style bias and style drift of the selected fund. Let's examine the output.

1. Remember that this method of style analysis is not designed to find a style that makes a fund look good or bad. The goal is to infer as much as possible about the exposures to variations in the returns of the asset classes during the time period being analyzed. The allocation table shows how the fund is allocated to the benchmarks in the style universe. We can see that over the date range computed, the fund shows a small allocation to cash, small allocation to small and large growth, and the majority of the allocation to mid-cap value and large cap value.

Russel Style1	Data Start	Data End	Allocation
ML 3-month T-Bills	Jan-1978	Oct-2004	1.544%
Russell 2000 Growth Index (DRI)	Jan-1979	Oct-2004	1.343%
Russell 2000 Value Index (DRI)	Jan-1979	Oct-2004	0.000%
Russell Midcap Growth Index (DRI)	Jan-1986	Oct-2004	0.000%
Russell Midcap Value Index (DRI)	Jan-1986	Oct-2004	60.424%
Russell Top 200 Growth Index (DRI)	Jan-1986	Oct-2004	2.963%
Russell Top 200 Value Index (DRI)	Jan-1986	Oct-2004	33.725%

2. The window on the lower left contains a pie chart and correlation statistics of the investment to the style benchmark. The style benchmark is the composite benchmark comprised of the allocations listed in the allocation window. It is important to NOTE that the style identified in such an analysis is, in a sense, an average of potentially changing styles over the period covered. Month to month deviations of the fund's return from that of style itself can arise from selection of specific securities within one or more asset classes, rotation among asset classes, or both security selection and asset class rotation. The term SELECTION in the pie chart is used to cover all such sources of tracking differences.



3. The charts to the right of the pie chart show the cumulative return for the selected investment, the style or blended benchmark and the market index, and a differential performance chart between the investment and the style and market benchmarks.

4. To view additional style analysis charts click the charts tab located on the menu bar. The charts can be seen below.

a. The **style attribution chart** contains the style and selection relative to the style and market benchmarks.

b. The **correlation statistics chart** contains the annualized return, annualized Alpha, Beta, correlation, r-squared, tracking error, Treynor ratio, Jensen alpha, active premium, and information ratio relative to the style and market benchmarks.

c. The capture ratio chart contains the up and down capture ratios relative to the style and market benchmarks: the percent up months in up markets; percent of down months in down markets relative to the style and market benchmarks; the percent of the time the style and market benchmarks were outperformed in up markets, down markets and all markets; and the profitable months ratio.

d. The next two charts show the **style allocation** as a **bar** or **pie chart**.

e. The **style history chart** shows the style drift over a number of rolling periods. You may change the number of rolling periods in the rolling periods box. For instance, if you want to view shorter-term style movement, enter 6-12 months. For longer rolling periods where there will be a smoothing out effect select 36-60.

f. The **style map dominant** chart plots a single point that represents the dominant style for each rolling period. The style dominant chart markers are blue plus signs of different sizes. The smaller plus signs represent the earlier rolling periods of the analysis and the larger plus signs represent the more current rolling periods.

g. The **style map multiple dominant** will produce the dominant style chart for multiple funds. This chart is useful if you are comparing managers with the same stated style category. The last chart is a style vs. growth matrix.

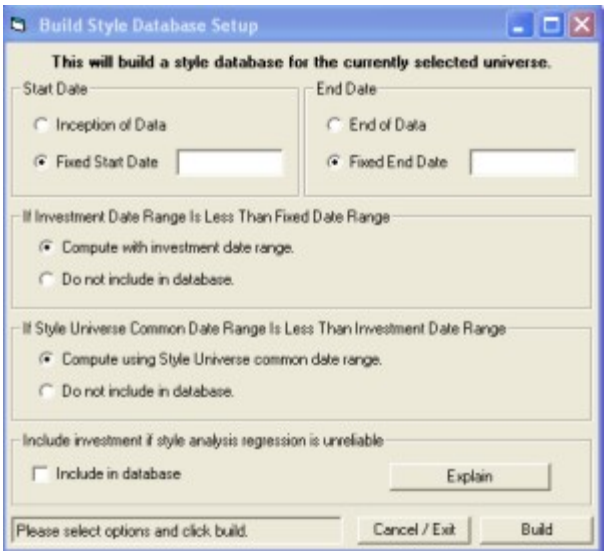
Style Analysis (Multiple Funds)

5.07 - Multiple Investment Style Analysis - View the online tutorial!

This section will walk you through performing style analysis on multiple funds at one time. We will also walk through performing style searches, once a style database has been built. When building a style database you can regress hundreds or thousands of funds against the style universe at one time. This is useful if you wish to use the style module as a search engine or if you wish to create style specific peer groups to be used when performing peer group analysis.

5.08 - Building a Style Database - View the online tutorial!

To perform a Style Search, you must first build a Style Database, which calculates all the necessary statistics for each record in your original database.

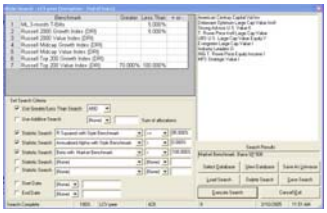

Build Style Database Setup
This will build a style database for the currently selected universe.
Start Date
Inception of Data
Fixed Start Date
End Date
End of Data
Fixed End Date
If Investment Date Range Is Less Than Fixed Date Range
Compute with investment date range.
Do not include in database.
If Style Universe Common Date Range Is Less Than Investment Date Range
Compute using Style Universe common date range.
Do not include in database.
Include investment if style analysis regression is unreliable
Include in database
Explain
Please select options and click build.
Cancel / Exit
Build

1. From the **Style Analysis Setup Window**, click **Build Style Database.**
2. When the **Build Style Database Setup Window** opens, enter a date range using the Start Date and End Date boxes.
3. If applicable, determine how to handle a record that has a date range less than the fixed date range.
4. Determine how to handle a record that has a date range greater than the common date range of the Style Universe.
5. Decide whether to include investments with unreliable style analysis regressions.
6. Click **Build**.
7. When the **Save Window** opens, enter a name for your Style Database and click **Save**.
8. When the build is complete, you can view the error log by clicking **Log** from the tool bar in the **Master Window**.

5.09 - Style Search - View the online tutorial!

Once the **Style Database** has been built, you are ready to perform a Style Search.

Style Search Window



1. From the **Style Analysis Setup Window**, click **Style Search**.
2. When the **Style Search Setup Form** opens, click **Select Database** and open a Style Database. The number of records in the database will be displayed in the **Investments in Database** box located at the bottom of the **Style Search Setup Form**.
3. Checking the **Use Greater/Less Than Search** checkbox activates the Style Universe table in the upper left corner of the **Style Search Setup Form**. This table contains a list of each index in the Style Universe. After entering the desired percentages in the **Greater Than** and **Less Than** columns, find the dropdown menu to the right of the **Use Greater/Less Than Search** checkbox. Select **AND** to search for investments that meet all of the criteria in the **Greater Than** and **Less Than** columns; select **OR** to search for investments that meet at least one criterion in the **Greater Than** and **Less Than** columns.
4. Checking **Use Additive Search** activates the "**+ or -**" column in the Style Universe table. Placing a "**+**" or a "**-**" in this column will add or subtract the allocations to the benchmarks you have entered **"+"** or **"-"**. The total value will be entered in the **Sum of Allocations** box located to the right of the **Use Additive Search** checkbox. The dropdown menu between the **Use Additive Search** and **Sum of Allocations** allows you to select ">", "<", "=", or a combination of these symbols, to complete the additive search argument.
5. Checking any one of the **Statistics Search** checkboxes will activate the corresponding row of controls. From here, you can select the desired statistic and comparative symbol, and then enter a value with which to compare each investment.
6. To search by start date or end date, check either the **Start Date** or **End Date** checkboxes (or both), select the desired comparative symbol, and enter a date with which to compare each investment.
7. Once all desired criteria have been entered, you may save the settings by clicking **Save Search** and entering a name for the saved search. The saved

search criteria will be stored in the Style Database and can be loaded in the future by clicking **Load Search**. A search can also be deleted by clicking **Delete Search.**

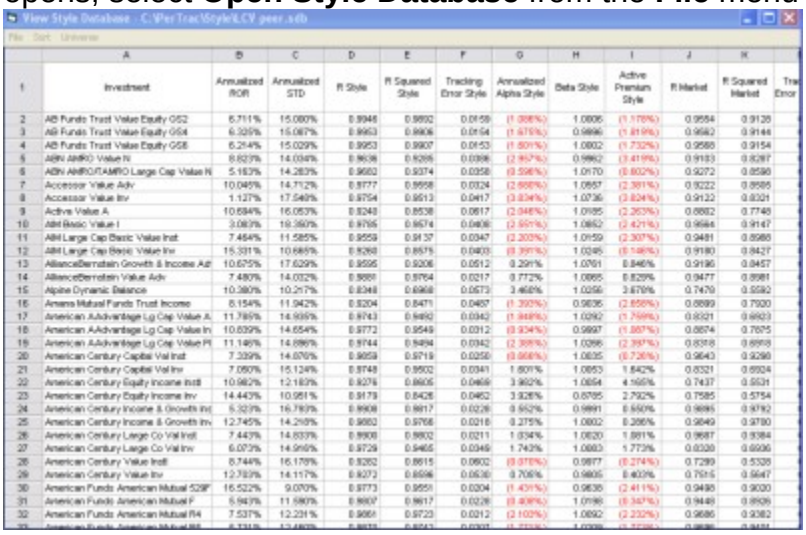
8. To perform the Style Search, click **Execute Search**.

Style Search Results

When the search is complete, the **Status** box at the bottom left of the **Style Search Setup Form** will change from "Searching" to "Search Complete" and the **Progress** box will read "100%". To the right of the **Investments in Database** box, the **Investments in Search Result** box will display the number of investments that meet your criteria. A scrollable list of the search results is displayed in the upper right corner and can be saved immediately as a universe by clicking **Save As Universe**.

Viewing the Style Database

All the statistics in your Style Database can be viewed in a spreadsheet by clicking **View Database** from the **Style Search Setup Form**. When the **View Style Database** window opens, select **Open Style Database** from the **File** menu and open the desired database.



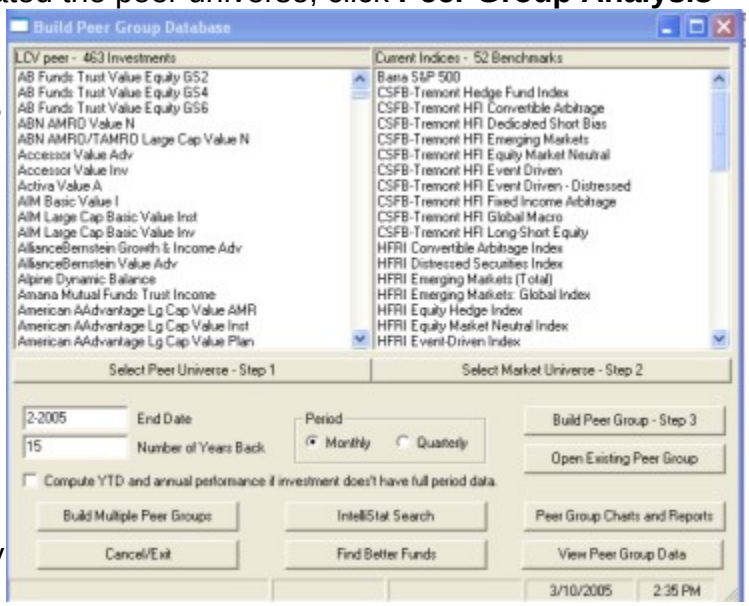
Once the data has loaded, you can rank the investments by highlighting the column of statistics by which you wish to rank and selecting either **Sort Ascending** or **Sort Descending** from the **Sort** menu. To work with the data of a particular universe, select **Display Universe Only** from the **Universe** menu and open the desired universe.

At any time, you can open the **Workbook Designer**, which will transfer all the current data to a worksheet that can be formatted and edited. This is done by either double-right-clicking over the worksheet or by selecting **Open Workbook Designer** from the **File Menu**.

Peer Group Analysis

6.01 - Building a Peer Group Database

1. Once you have created the peer universe, click **Peer Group Analysis (**located on the bottom of the **Home** window).


Build Peer Group Database
LCV peer - 463 Investments
Current Indices - 52 Benchmarks
AB Funds Trust Value Equity GS2
AB Funds Trust Value Equity GS4
AB Funds Trust Value Equity GS6
ABN AMRO Value N
ABN AMRO/TAMRO Large Cap Value N
Accessor Value Adv
Accessor Value Inv
Activa Value A
AIM Basic Value I
AIM Large Cap Basic Value Inst
AIM Large Cap Basic Value Inv
AllianceBernstein Growth & Income Adv
AllianceBernstein Value Adv
Alpine Dynamic Balance
Amana Mutual Funds Trust Income
American AAdvantage Lg Cap Value AMR
American AAdvantage Lg Cap Value Inst
American AAdvantage Lg Cap Value Plan
Barra S&P 500
CSFB-Tremont Hedge Fund Index
CSFB-Tremont HFI Convertible Arbitrage
CSFB-Tremont HFI Dedicated Short Bias
CSFB-Tremont HFI Emerging Markets
CSFB-Tremont HFI Equity Market Neutral
CSFB-Tremont HFI Event Driven
CSFB-Tremont HFI Event Driven - Distressed
CSFB-Tremont HFI Fixed Income Arbitrage
CSFB-Tremont HFI Global Macro
CSFB-Tremont HFI Long/Short Equity
HFRI Convertible Arbitrage Index
HFRI Distressed Securities Index
HFRI Emerging Markets (Total)
HFRI Emerging Markets: Global Index
HFRI Equity Hedge Index
HFRI Equity Market Neutral Index
HFRI Event-Driven Index
Select Peer Universe - Step 1
Select Market Universe - Step 2
2-2005
End Date
15
Number of Years Back
Period
Monthly
Quarterly
Build Peer Group - Step 3
Open Existing Peer Group
Compute YTD and annual performance if investment doesn't have full period data
Build Multiple Peer Groups
Intelli5tat Search
Peer Group Charts and Reports
Cancel/Exit
Find Better Funds
View Peer Group Data
3/10/2005
2:35 PM

2. When the **Build Peer Group Database Window** opens, click **Select Peer Universe** to select a Peer Universe and then click **Open**.

3. Click **Select Market Universe** and select a universe of benchmarks that you wish to use in the peer group analysis.

4. Enter a date range by filling in the **End Date** and **Number of Years Back** boxes.

5. Select whether to use Monthly or Quarterly periods.

6. Decide whether to compute year-to-date and annual performance data for investments that do not have the full period data.

7. Click the **Build Peer Group** button.

8. When the **Save Window** opens, the **Save in** box defaults to the peer folder and the **Save as type** box defaults to ".pdb", for “Peer Database”. Keep these settings, and enter a name for your peer database. Click **Save**.

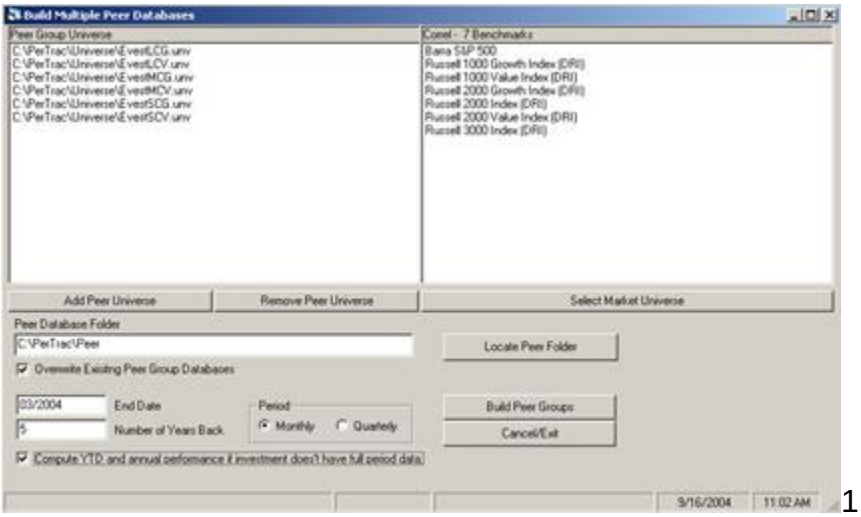
The **Step** box and **Progress** box at the bottom of the **Build Peer Group Database Window** will allow you to monitor the progress of each of the 10 steps in the database building process. When the build is complete, the **Status** box will read “Peer Database Build Complete”.

NOTE – The peer module output includes the ability to create floating quartile bar charts on 145 statistics and performance measures, as well as rolling period analysis. Building the peer database calculates and produces rankings on each of these measures for every fund in the peer universe and the benchmarks in the market universe.

TIP – Once a peer database has been built, you can open that peer database at any time in the peer analysis window by clicking **Open Existing Peer Group**.

6.02 - Building a Multiple Peer Group Databases

Since each Peer Group Database is time specific, you must re-run them whenever new data is made available. Also, if you wish to have PerTrac build more than one peer database at a time, the **Build Multiple Peer Groups** option should be used. The **Build Multiple Peer Groups** option can be found in the lower left of the **Build Peer Group Window** and is a useful timesaving function that allows PerTrac to calculate or recalculate multiple peer groups simultaneously.



1. From the **Build Peer Group Database** window select the **Build Multiple Peer Groups** option in the lower left.

2. Select all of the universes (peer groups) for which you wish to build peer databases and decide if you would like to overwrite any prior existing peer databases.

3. Select a **Market Universe.**

4. Locate the **Peer Folder** that will contain the peer databases after they have been calculated (PerTrac\Peer).

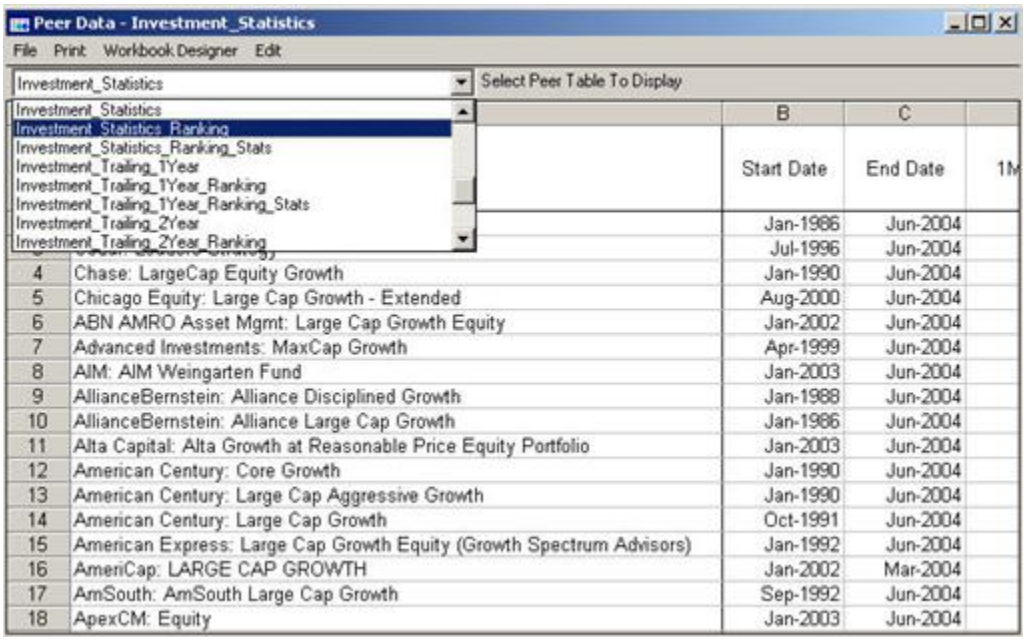
5. Select the end date and number of years back for the calculations.

6. Make a decision about computing **YTD** and **annual performance** for any managers that do not have returns through the end date that you entered.

7. When you have finished all of the above steps, click **Build Peer Groups**. PerTrac will then compute and build all of the peer groups and place them into the **Peer** folder as ".pdb" files. To access any of these peer databases, return to the **Build Peer Group Database Window** and select **Open Existing Peer Group**.

6.03 - View Peer Group Data - View the online tutorial!

Clicking **View Peer Group Data** opens the **Peer Data Window**, which allows you to easily view tables from your **Peer Group Database**. This series of spreadsheets contain the data underlying the peer group analysis charts.



		B	C	
		Start Date	End Date	1M
		Jan-1986	Jun-2004	
		Jul-1996	Jun-2004	
4	Chase: LargeCap Equity Growth	Jan-1990	Jun-2004	
5	Chicago Equity: Large Cap Growth - Extended	Aug-2000	Jun-2004	
6	ABN AMRO Asset Mgmt: Large Cap Growth Equity	Jan-2002	Jun-2004	
7	Advanced Investments: MaxCap Growth	Apr-1999	Jun-2004	
8	AIM: AIM Weingarten Fund	Jan-2003	Jun-2004	
9	AllianceBernstein: Alliance Disciplined Growth	Jan-1988	Jun-2004	
10	AllianceBernstein: Alliance Large Cap Growth	Jan-1986	Jun-2004	
11	Alta Capital: Alta Growth at Reasonable Price Equity Portfolio	Jan-2003	Jun-2004	
12	American Century: Core Growth	Jan-1990	Jun-2004	
13	American Century: Large Cap Aggressive Growth	Jan-1990	Jun-2004	
14	American Century: Large Cap Growth	Oct-1991	Jun-2004	
15	American Express: Large Cap Growth Equity (Growth Spectrum Advisors)	Jan-1992	Jun-2004	
16	AmeriCap: LARGE CAP GROWTH	Jan-2002	Mar-2004	
17	AmSouth: AmSouth Large Cap Growth	Sep-1992	Jun-2004	
18	ApexCM: Equity	Jan-2003	Jun-2004	

The dropdown menu at the top left of the window contains a list of each available table. There are three options for each chart type:

1. **Statistics/Data**: These spreadsheets contain the actual values for the selected statistic, for each of the investments in the universe.
2. **Ranking/Statistics Ranking**: These spreadsheets contain the ranking for the selected statistic, for each of the investments in the universe.
3. **Statistics Ranking/Statistics_Ranking_Stats:** These spreadsheets contain the rankings for the universe broken down by deciles for the selected statistic.

TIP: Once the table is loaded, you can use the **File**, **Print**, and **Edit** menus for basic saving, printing, and editing functions. For more advanced capabilities, select **Open Workbook Designer** from the **Workbook Designer** menu.

6.04 - IntelliStat™ Search - View the online tutorial!

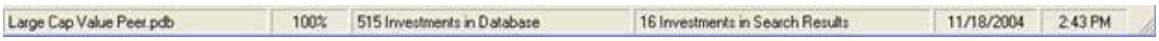
The IntelliStat™ Search allows the user to create universes by running a search on any peer database you have created. To access the search window click IntelliStatTM Search (in the peer

analysis window). The search criteria selection window includes 53 performance measures and 9 risk measures. When your search criteria have been selected, click the down arrow at the end of each statistic to select the percentile requirement. For example, you could search for all funds that fall within the top 25% of the peer universe for the last 3 Year Annualized Return and 3 Year Annualized Sharpe Ratio.

NOTE: If you select multiple criteria for the IntelliStat™ search, the funds must meet all of the criteria to be included in the output. In the example above, the funds must fall in the top 25% on the 3 Year Annualized Return and 3 Year Annualized Sharpe Ratio, not 3 Year Annualized Return or 3 Year Annualized Sharpe Ratio.

When your selections have been made, click **Execute Search** The results will be displayed in the column on the right side of the window. The IntelliStat™ figure that is displayed is the average ranking of each fund for each of the statistics on which you searched.

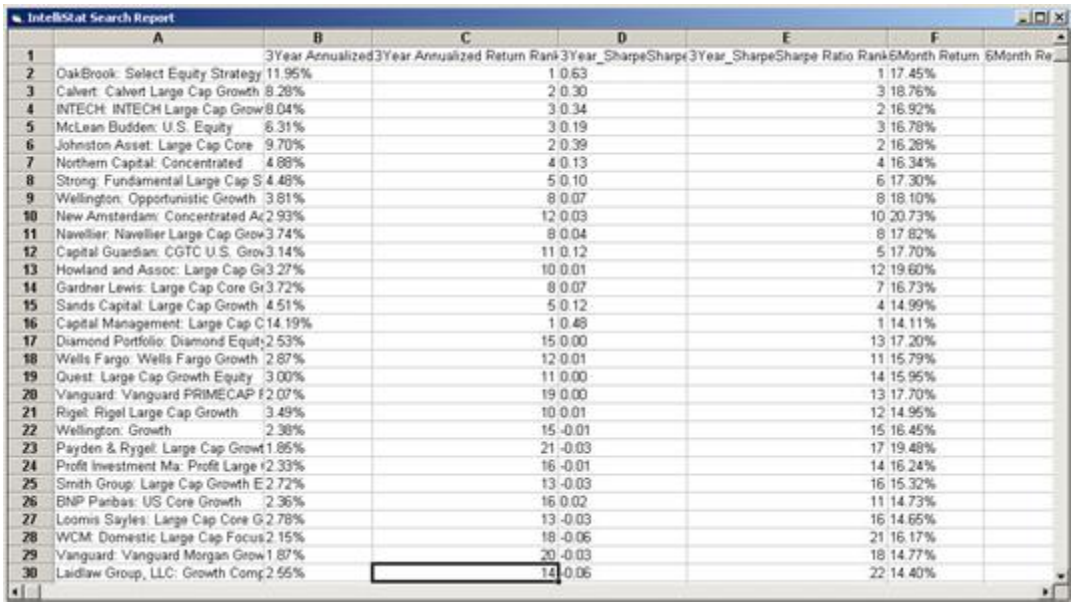
IntelliStat™ Status Bar



The IntelliStat™ bar, from left to right, will provide the name of the peer group being analyzed, the number of funds in that peer database, the number of funds that met your search criteria, and the current date and time.

View Search Report

The **View Search Report** option creates a detailed report of each of the funds that met your search criteria. This report displays the statistics for each of the funds, as well as the fund's ranking within the peer group for that statistic. IntelliStat™ will then average the rankings and sort your funds in an ascending order.



	A	B	C	D	E	F	
1		3Year Annualized	3Year Annualized Return Rank	3Year_SharpeSharpe	3Year_SharpeSharpe Ratio Rank	6Month Return	6Month Re
2	OakBrook: Select Equity Strategy	11.95%	1	0.63	1	17.45%	
3	Calvert: Calvert Large Cap Growth	8.28%	2	0.30	3	18.76%	
4	INTECH: INTECH Large Cap Grow	8.04%	3	0.34	2	16.92%	
5	McLean Budden: U.S. Equity	6.31%	3	0.19	3	16.78%	
6	Johnston Asset: Large Cap Core	9.70%	2	0.39	2	16.28%	
7	Northern Capital: Concentrated	4.88%	4	0.13	4	16.34%	
8	Strong: Fundamental Large Cap S	4.48%	5	0.10	6	17.30%	
9	Wellington: Opportunistic Growth	3.81%	8	0.07	8	18.10%	
10	New Amsterdam: Concentrated Ac	2.93%	12	0.03	10	20.73%	
11	Navellier: Navellier Large Cap Grow	3.74%	8	0.04	8	17.82%	
12	Capital Guardian: CGTC U.S. Grov	3.14%	11	0.12	5	17.70%	
13	Howland and Assoc: Large Cap Gr	3.27%	10	0.01	12	19.60%	
14	Gardner Lewis: Large Cap Core Gr	3.72%	8	0.07	7	16.73%	
15	Sands Capital: Large Cap Growth	4.51%	5	0.12	4	14.99%	
16	Capital Management: Large Cap C	14.19%	1	0.48	1	14.11%	
17	Diamond Portfolio: Diamond Equit	2.53%	15	0.00	13	17.20%	
18	Wells Fargo: Wells Fargo Growth	2.87%	12	0.01	11	15.79%	
19	Quest: Large Cap Growth Equity	3.00%	11	0.00	14	15.95%	
20	Vanguard: Vanguard PRIMECAP F	2.07%	19	0.00	13	17.70%	
21	Rigel: Rigel Large Cap Growth	3.49%	10	0.01	12	14.96%	
22	Wellington: Growth	2.38%	15	-0.01	15	16.45%	
23	Payden & Rygel: Large Cap Growt	1.85%	21	-0.03	17	19.48%	
24	Profit Investment Ma: Profit Large C	2.33%	16	-0.01	14	16.24%	
25	Smith Group: Large Cap Growth E	2.72%	13	-0.03	16	15.32%	
26	BNP Paribas: US Core Growth	2.36%	16	0.02	11	14.73%	
27	Loomis Sayles: Large Cap Core G	2.78%	13	-0.03	16	14.65%	
28	WCM: Domestic Large Cap Focus	2.15%	18	-0.06	21	16.17%	
29	Vanguard: Vanguard Morgan Grow	1.87%	20	-0.03	18	14.77%	
30	Laidlaw Group, LLC: Growth Comp	2.55%	14	-0.06	22	14.40%	

IntelliStat™ Search Window Option Buttons

Save Universe As: This button will allow you to save your search results as a new universe (.unv file) for futher analysis in PerTrac.
Clear Search: This option will clear all previously selected criteria from the search window.
Save Search: Use this option to save your search criteria for further searches.
Load Search: Use this option to load your previously saved search criteria.
Cancel/Exit: This option will exit the IntelliStat™ window.

6.05 - Find Better Funds Search - View the online tutorial!

The **Find Better Funds Search**, similar to the IntelliStat™ search, allows the user to create new universes by searching a peer database. To access this search window click **Find Better Funds** on the peer analysis window. The search criteria selection window contains the same 53 performance measures and 9 risk measures as IntelliStat™. However, when the search criteria have been selected, the search will not find the funds that fall within a certain percentile of the peer group, but rather those funds that outperform an

investment or benchmark in the peer database. For example, you could search for all funds that outperformed a fund listed under **Investments** or a benchmark listed under the **Benchmarks** label for the last 3 Year Annualized Return and 3 Year Annualized Sharpe Ratio.

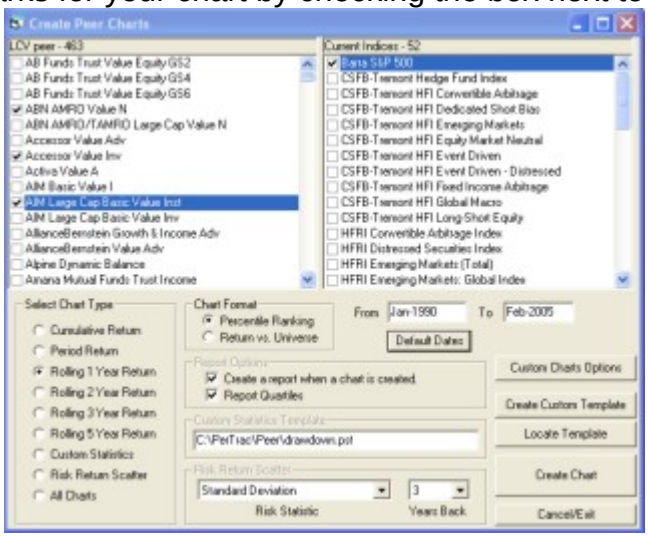
6.06 - Peer Group Charts and Reports - View the online tutorial!

Once you have created and selected a Peer Group Database, you can proceed to creating Peer Group Charts and Reports by clicking **Peer Group Charts and Reports**.

Creating a Peer Group Chart

The top of the **Create Peer Charts Window** contains a list of investments in the Peer Universe on the left and a list of the benchmarks in the Market Universe on the right. Below these lists are controls for selecting chart type, format, and other available settings.

1. From the scrollable lists at the top of the **Create Peer Charts Window**, select investments and benchmarks for your chart by checking the box next to the name.



2. Enter a date range in the **From** and **To** boxes, or click the **Default Dates** button to select the widest possible date range.

3. Select a chart type from the **Select Chart Type** box. If you wish to sample the available charts, select the **All Charts** option.

4. For Period Return or Rolling Return charts, choose either **Percentile Ranking** or **Return vs. Universe** from the **Chart Format** box.

5. For Custom Statistics charts, click **Locate Template** and select a previously created Peer Group Statistics Template file (discussed later in this section). The Custom Statistics chart also allows you to generate a report that displays a table of data related to the specified chart. To activate this feature, check the box labeled **"Create a report when a chart is created"**. The default increment for the report is deciles. To change this to quartiles, check the box labeled **"Report Quartiles".**

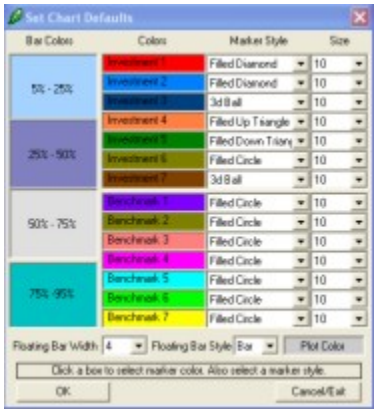
6. For risk-return charts, select the desired risk statistic and the number of years from the dropdown menus in the **Risk-Return Scatter** box.

7. When all the options have been entered, click **Create Chart**.

Chart Options

Clicking **Custom Chart Options** from the **Peer Charts Window** opens the **Set Chart Defaults Window**, where you can select default colors, styles, and sizes for various objects in your charts.

1. The four large boxes along the left side of the window display the current colors for each of the quartile bars used in Return vs. Universe charts. Clicking on one of these boxes opens the **Color Window**, where you can either choose from the existing colors or create your own color by clicking the **Define Custom Colors** button. Click **OK** once a color is selected.



2. To the right of the Bar Colors are the Marker settings, where you can set the colors for 7 investment markers and 7 benchmark markers using the same method described above.

3. The Marker Style dropdown menus allow you to assign a particular style (3D-Ball, Square, Circle, Diamond, or Triangle) to each marker. Selecting Null will hide that particular marker.

4. The Size dropdown menus allow you to adjust the size of each marker, with sizes ranging from 4 through 12.

5. The Floating Bar Width can be adjusted from 1 through 12.

6. The Floating Bar Style can be either Bar or Area.

7. The Plot Color box allows you to select a color for the background of the chart in the same way that the other color settings were selected.

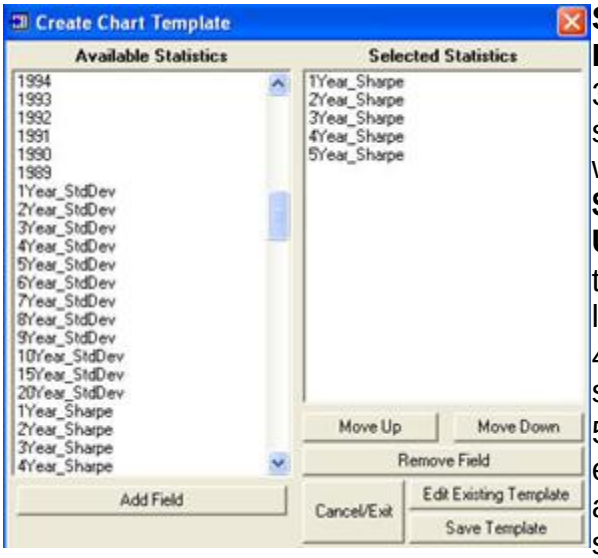
8. Once all the settings have been entered, click **OK**.

Creating a Custom Statistics Template

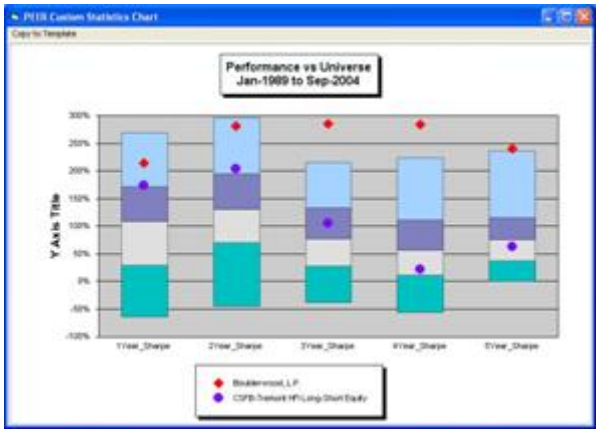
As mentioned earlier, the Custom Statistics chart type requires that you create a Peer Group Statistics Template file. To open the **Create Chart Template Window**, click **Create Custom Template** from the **Create Peer Charts Window**.

The left side of the window contains a scrollable list of available statistics. The right side of the window will display the statistics you select for the chart.

1. Add statistics to the **Selected Statistics** list either by double clicking on a statistic in the **Available Statistics** list or by clicking on a statistic in the **Available Statistics** list and clicking **Add Field**.
2. Remove any unwanted statistics, if necessary, either by double clicking on a statistic in the **Selected Statistics** list or by clicking on a statistic in the **Selected Statistics** list and clicking **Remove Field**.



3. To adjust the order of a selected statistic, click on the statistic you wish to move in the **Selected Statistics** list and click either **Move Up** or the **Move Down** button until the statistic is in the desired location.
4. When all statistics have been selected, click **Save**.
5. When the **Save Window** opens, enter a name in the **File name** box and click **Save**. The file will be saved with a ".pst" extension.
6. To edit a template in the future, click **Edit Existing Template**, and open the desired ".pst" file.
7. To put the Custom Statistics Template in use, set the chart type to either **Custom Statistics** in the **Create Peer Charts Window**, then click **Locate Template** and open the desired ".pst" file.



NOTE: There are 145 performance and risk measures from which to choose when creating custom quartile bar charts.

Portfolio Simulation and Stress Testing

7.01 - Simulation Methodology

Simulation Procedure: The Monte Carlo module is designed to perform *K* Monte Carlo replications. In each Monte Carlo replication the module generates a return stream of length *N* periods for each asset in the portfolio (i.e., the time series of returns). The Monte Carlo module then calculates fourteen portfolio metrics.

Simulation Models

Bootstrap

The first approach is a bootstrapping procedure that treats the time series data as a discrete sample space. This can be simply described in the following manner: The simulation takes your portfolio's historical return data series based on your specified date range and creates N time series (N = **Number of Simulations)** by randomly sampling the historical return data. For example, let's suppose your portfolio date range is from 1/99 to 6/04 using monthly data and you want to simulate 3 years for your analysis using 1,000 for the **Number of Simulations**. This example is using 66 historical time series periods (1/99 to 6/04). The simulation makes a random draw from these 66 dates to produce the first month of the simulated results. To create one, three-year "simulation", there would be 36 such draws. In this example, this process would then be repeated until 1000 three-year track records had been created.

The advantages of the bootstrapping approach are its simplicity and implicit assumption about the distribution of returns. The disadvantage of this approach is if your data has some skewed data points that you don't necessarily believe will likely occur again, the random draw could pick them and again skew the result.

Normal

The normal method takes its random draws from a normal distribution fitted to the actual return time series. This method is similar to the Bootstrap except it redraws the sample based on a normal distribution. For example: If your portfolio distribution is negatively skewed and peaked at the mean, this method will smooth out the distribution of returns. This normal distribution essentially limited the skewness and peaked distribution to a "normal" fit.

The advantage of the normal approach is allowing you to limit the impact of data displaying significant skewness and/or kurtosis; however this could be viewed as a disadvantage, since few investments display normal distributions over time.

Mod Normal (Lognormal)

The mod normal method takes its random draws from a normal distribution calculated from the logarithm of the actual return time series. This method forms a flatter distribution with fatter tails, emphasizing positive skewness. For example, if your portfolio distribution is positively skewed and peaked at the mean, this method will smooth out the distribution but preserve the positive skewness.

The advantage of the lognormal approach is allowing you to preserve the positively skewed data. The disadvantage is incorrectly using this method for a distribution that is either negatively or slightly skewed which would distort the results.

GARCH (Generalized Autoregressive Conditionally Heteroskedastic)

This is the most complex model available in the Monte Carlo module. It hypothesizes that volatility is time varying and serially correlated. Returns are uncorrelated from period to period. This pattern is stronger in daily returns and diminishes for monthly or quarterly returns. Historical returns typically do not exhibit any significant autocorrelation, but the squares of the returns often do. This behavior is the motivation for stochastic volatility models. GARCH models are a class of stochastic volatility models that exhibit the typical fat tails of return distributions together with serial correlation in volatility.

7.02 - Portfolio Simulation and Stress Testing Setup - View the online tutorial!

PerTrac contains a **Value at Risk**, Monte Carlo portfolio simulator that builds probability distribution outcomes for several risk measures. To access the simulation module click **Portfolio Simulation and Stress Testing** located at the bottom of the PerTrac **Home** window.

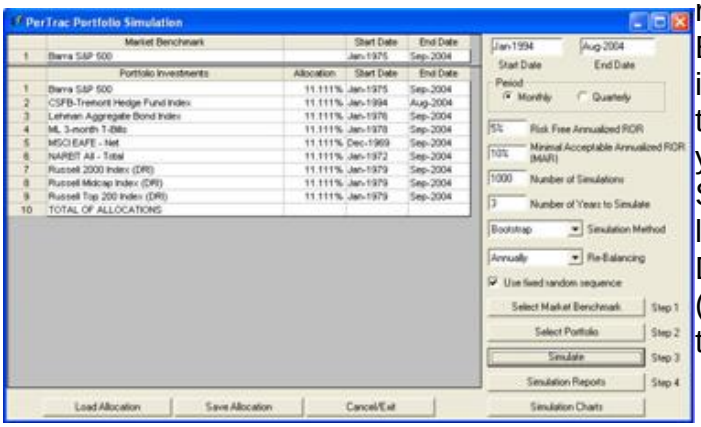
Portfolio Simulation Setup

While setting up a portfolio simulation, you will use the settings along the right side of the window, as well as the buttons at the bottom right of the window that take you through the four basic steps.

1. Click **Select Market Benchmark** (“Step 1”). When the **Select Market Benchmark Window** opens, select a benchmark from the dropdown menu, which lists each benchmark in your **Correlation Universe (Correl.unv)**.

2. Click **Select Portfolio** ("Step 2"). When the **Select Universe Window** opens, select the desired universe and click **Open**.

3. The **Start Date** and **End Date** boxes will now display the common date range among the Market Benchmark and each item in the Portfolio Investments table. Using these boxes, you can enter either a new Start Date (which must be later than the initial Start Date) or a new End Date (which must be earlier than the initial End Date).



4. Enter the desired **Allocation** for each item in the portfolio as either a decimal or a percentage value. The last cell in the Allocation column calculates the total allocation. Once entered, the allocation can be saved by clicking **Save Allocation** and entering a name for the ".saf" file. The allocation can then be loaded in the future by clicking **Load Allocation**.

NOTE: The simulation module requires you to have at least 12 months of data for the portfolio or investment being simulated.

TIP – If want to equally weight the portfolio, don't enter any allocations. When you click **Simulate** a window will appear asking you if you want to equally weight the portfolio.

5. Using the buttons at the right, specify whether you are using monthly or quarterly data.

6. Enter a Risk Free Rate of Return and a Minimal Acceptable Return to use for calculating risk statistics.

7. Enter the number of simulations you wish to generate. Each simulation consists of a random data stream that represents just one possible future outcome. Thousands of these simulations can be pooled together in what is similar to a peer group, giving you an indication of the probability of various outcomes.

8. Enter the number of years you wish to simulate. This represents the length of each random data stream and must be at least one year.

9. Select one of the four random simulation methods from the dropdown menu.

10. Choose **Monthly, Quarterly, Annually**, or **None** from the **Re-Balancing** dropdown menu.

11. When checked, the **Use fixed random sequence** checkbox will maintain a consistent randomness throughout several simulation setups.

12. Once all settings have been made, click **Simulate**.

13. The time required to complete the simulation will vary depending on the options selected and the speed of your computer. If you decide the simulation is taking too long, the only way to exit is by pressing **Ctrl**, **Alt**, and **Delete** simultaneously, then clicking the **End Task** button from the **Close Program Window**. You will then have to restart PerTrac to continue. Otherwise, when the **Simulation Complete** message appears, click **OK**.

14. To view the results, click **Simulation Reports**.

7.03 - Simulation Reports - View the online tutorial!

The **Portfolio Simulation Reports Window** allows you to view a simulation report. If you would like to view the annualized return report, begin by selecting **"Annualized Return"** from the dropdown menu.

The first few rows display the number of simulations (1,000 in this example), along with the mean, median, and standard deviation for both the portfolio and the benchmark. Below these are the Maximum (Portfolio #1) and Minimum (Portfolio # 1,000) values for each statistic selected, which represent the best case and worst case scenarios.

NOTE: – Columns **C (Portfolio Historical)** and **F (Benchmark Historical)** show the actual historical result for each of the statistics selected from the drop-down window, and will repeated throughout that column.

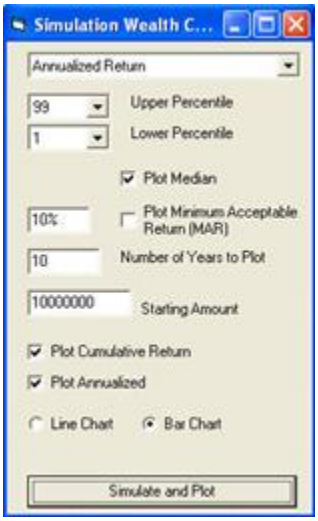
The results of the simulation **(Probability Distributions**) are listed in **Column B**. Just below the Maximum and Minimum outcomes will be the outcome distributions from the 99th Percentile down to the 1st Percentile. There is a 1% chance of achieving the 99th Percentile outcome and a 99% chance of achieving the 1st percentile outcome.

7.04 - Simulation Charts - View the online tutorial!

In addition to the Simulation Report shown above, you may also create Simulation Charts. **Simulation Reports** allow you to simulate on only one period at a time (i.e. 3 year). The **Simulation Charts**, on the other hand, will allow you

simulate on multiple time periods (i.e. 1 year through 10 years). Follow the steps below to create simulation charts.

Click **Simulation Charts** in the PerTrac Portfolio Simulation window.



1. When the **Simulation Wealth Charts** window opens, select a statistic from the dropdown menu.
2. Set the upper and lower percentiles from the corresponding menus.
3. If applicable, check the **Minimum Acceptable Return** checkbox and enter a value.
4. Enter the number of years to plot. In this example we are plotting 10 years. If you are running 1,000 simulations, a total of 10,000 simulations will take place. (1,000 simulations on a 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 basis)

NOTE: When **Annualized Return** is selected from the drop-down box, there are two types of charts that can be created. One chart shows the ranges of outcomes for the annualized returns, while the other is a wealth chart in which the Y-axis will be in dollar terms rather than annualized percentage return.

5. If you are running a wealth chart, enter a starting amount.

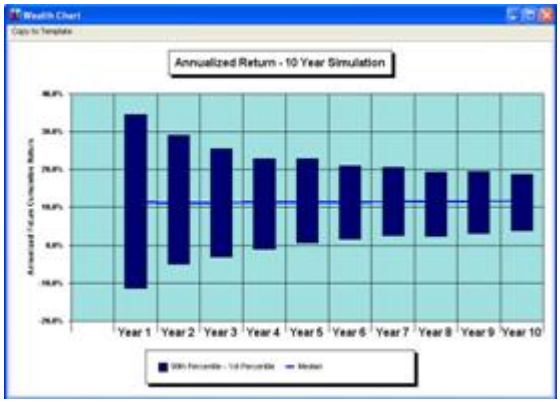
Checkboxes are available to plot **Cumulative Return**, or **Annualized Statistics**.

NOTE: The **Plot Cumulative Return** & **Plot Annualized** check boxes will only be visible when Annualized Return is selected from the drop-down box. If you select statistics other than Annualized Return, these options will be grayed out.

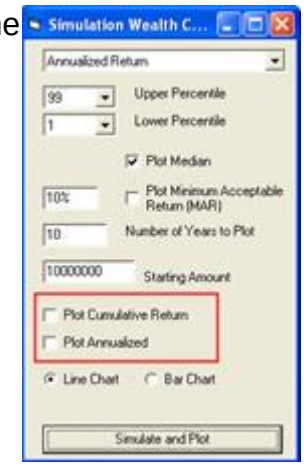
6. Select either the **Line Chart** or **Bar Chart** option.

TIP – When plotting statistics from the drop down list, the bar chart is the better option. When creating the wealth chart described below, the line chart looks better.

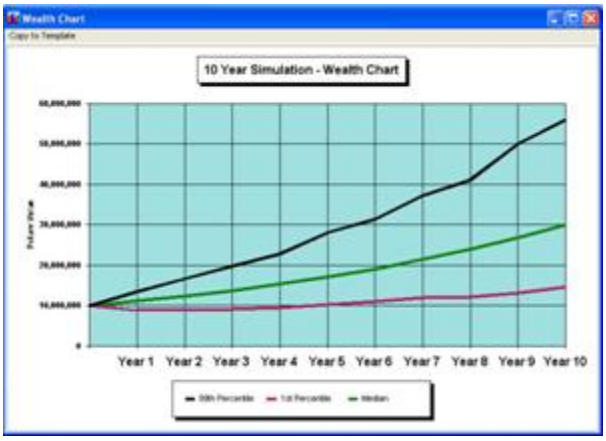
7. Click **Simulate and Plot** to display the chart.



Creating the Wealth Chart



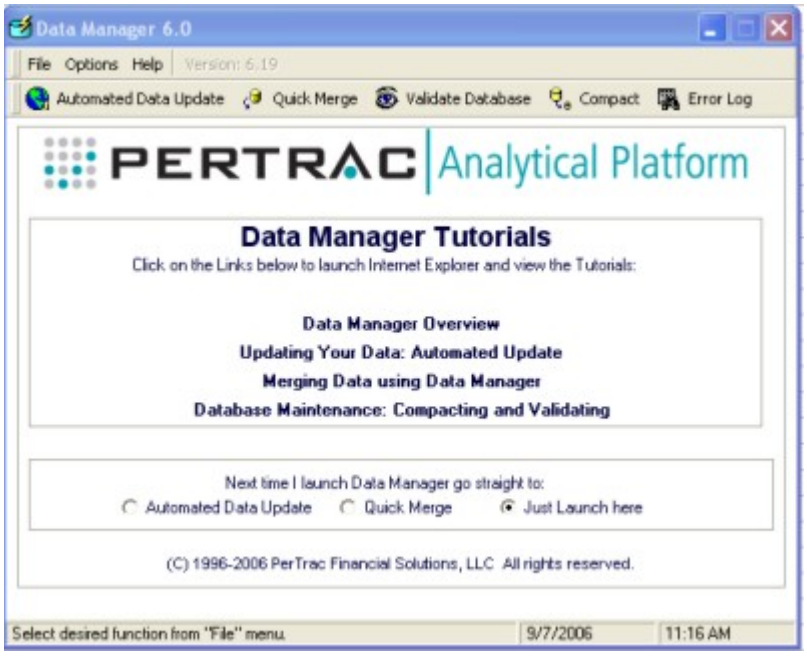
1. To create the Wealth Chart click **Simulation Charts** on the simulation setup window. As mentioned above, Annualized Return must be selected in the drop-down box.
2. Set your Upper and Lower Percentiles.
3. Elect to plot the Median or not.
4. Enter the Number of Years to Plot.
5. Enter your starting dollar amount in the Starting Amount window.
6. Uncheck both the Plot Cumulative and Plot Annualized boxes
7. Select Line Chart.
8. Click Simulate and Plot. The Y-Axis will contain dollar values.



Data Manager

8.01- Data Manager - View the online tutorial!

Data Manager is a powerful multi-task utility program located within PerTrac. Data Manager has a built-in **Automated Update** feature for updating your databases from within PerTrac. Data Manager also contains utilities for merging databases together, merging just a universe from one database to another, import and export functions, as well as utilities to help prevent database corruption. Each of these functions will be explained below. To launch the Data Manager, click the **Tools** tab on the PerTrac menu bar. Click **Data Manager**. The **Data Manager** window will open.

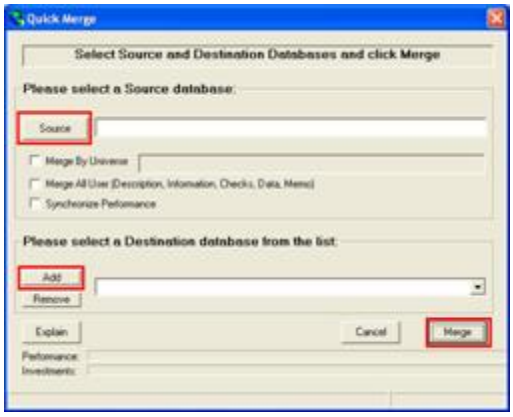


TIP: The center of this window contains links to online tutorials that will walk you through each of the four main functions, **Data Manager Overview, Automated Data Update, Merging Data and Database Maintenance**, discussed below. The bottom of the window contains three quick launch options: **Automated Data Update** will open the **Database Download** window; **Quick Merge** will open the **Database Merge** window; **Just Launch Here** will open the main **Data Manager** window shown above.

8.02 - Merging Your Data: Quick Merge

The **Quick Merge** option is a tool for manually merging a database with another database or merging a universe with a database.

Merging Databases



Step 1: From the **Home** window in PerTrac, click the **Tools** tab on the upper menu bar. Click **Data Manager**. When the Data Manager window appears, click **Quick Merge**. The Quick Merge window will open.

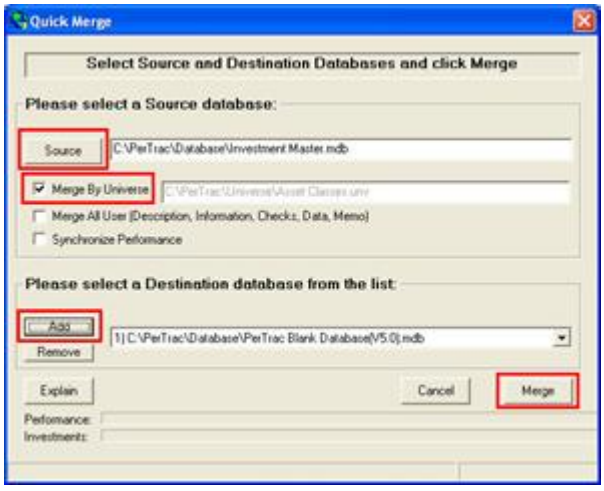
Step 2: Click **Source** to locate the database you want to merge to another database.

Step 3: Click **Add** to locate the database you are merging with.

Step 4: Click **Merge** to merge.

TIP: You only have to click the **Add** button once for each database to which you merge. These databases will be added to a list that can be accessed by clicking the **down arrow** in the destination database window. When you merge at a future date, click the down arrow to select the database with which to merge.

Merging a Universe with a Database



Step 1: From the **Home** window in PerTrac, click the **Tools** tab on the upper menu bar. Click **Data Manager**. When the Data Manager window appears, click **Quick Merge**. The Quick Merge window will open.

Step 2: Click **Source** to locate the database in which the **Universe** was created.

Step 3: Check the box under the

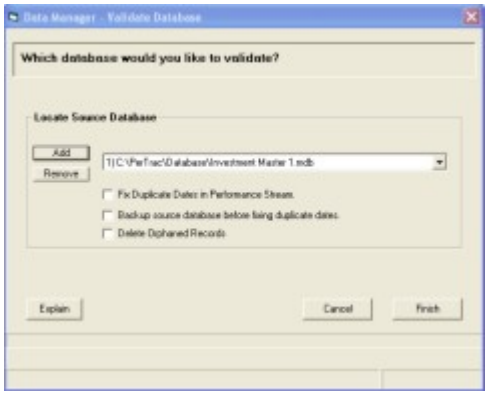
Source button, **Merge by Universe,** to locate the universe you want to merge.

Step 4: Click **Add**, or click the down arrow in the **Destination** window, to locate the database into which you will merge the universe.

Step 5: Click **Merge** to.

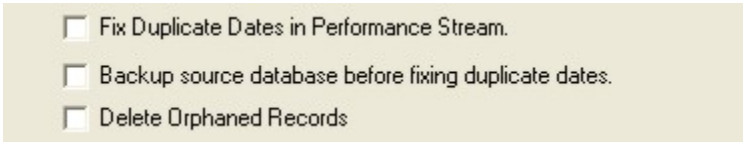
8.04 - Validate Database

The **Validate Database** feature allows you to scan a database for structural or referential errors. You should back up your database prior using this feature.
Step 1: Click **Validate Database** on the menu bar. This will open the **Data Manager – Validate Database** window.
Step 2: Locate the Source Database: click **Add** to select the database to validate.



TIP: Once a database has been added, click the down arrow in the **Source Database** window to select a previously validated database.

Step 3: Check Box Options:


Fix Duplicate Dates in Performance Stream.
Backup source database before fixing duplicate dates.
Delete Orphaned Records

Fix Duplicate Dates in the Performance Stream: This feature will allow you to automatically delete duplicate dates in the database. For example, if an investment has two performance entries for April 2000, PerTrac will display an error message that states the investment has either duplicate dates or dates missing from the performance steam.
Backup Source database Before Fixing Duplicate Dates:
This check box will allow Data Manager to back up the original database prior to the validation with the same name in the same folder, adding "**backup"** to the file name. It will also compact the database to fix any data corruption issues.

Delete Orphaned Records:
If data has been deleted from the Master Name or Information database tables orphaned records could be created, which might lead to errors. This option will delete all orphaned records.
Step 4: Click **Finish**.

8.05 - Compacting Your Database

Validation is a data maintenance tool, while Compacting is a file maintenance tool. It is very important that you compact your database at least once a week, if not more often. This is even more important if you have a lot of users on a network. The compacting process will keep the database file structure from becoming corrupt.

Step 1: Click **Compact** on the menu bar. This will open the **Compact Utility – Select Database** window.

Step 2: Click **Locate** to select a database to compact.
Step 3: Click **Next**. The **Compact Utility – Finish** window opens. Click **Finish** to start the compact process.

!!! NOTE: **Do not use Ctl-Alt-Del while the database compacting is in process. This action will corrupt your database to the point that all data will be lost. Let the process finish even if your task manager says it is not responding.**

TIP: For more technical preventive and repair measures, have your IT department review this Microsoft Access Database site.
http://support.microsoft.com/default.aspx?scid=kb;en-us;Q306204

Error Log

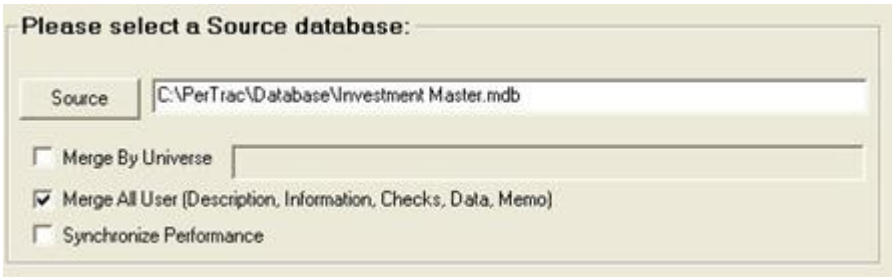
The **Error Log** will keep a list of Data Manager errors that are encountered when using the utility.

File Tab Options

Refer to the section: **Updating Your Database – Automated Update**

Refer to the section: **Merging Your Data – Quick Merge.**

Refer to the section: **Merging Your Data – Quick Merge.** However, there is one main difference between the Quick Merge and Advanced Merge. **Quick Merge** will not merge **User** data located on the **User Information, User Category** or **User Memo** investment information pages. To merge your user data while performing the Quick Merge, check the box **Merge All User (Description, Information, Checks, Data, Memo).**



Selecting Import from the File menu starts the Import Wizard, which allows you to import your previously exported data into a blank PerTrac database. When you install PerTrac, a blank database, "\PerTrac\Database\PerTrac Blank(v3.0).mdb", is installed which acts as a template for this operation. Before you import, make a copy of this blank database and save it with a new name so that you may re-use the original blank database in the future.

1. In Windows Explorer, open the **PerTrac/Database** folder and make a copy of "PerTrac Blank.mdb".
2. Re-name copy of the blank database so you will remember it later.

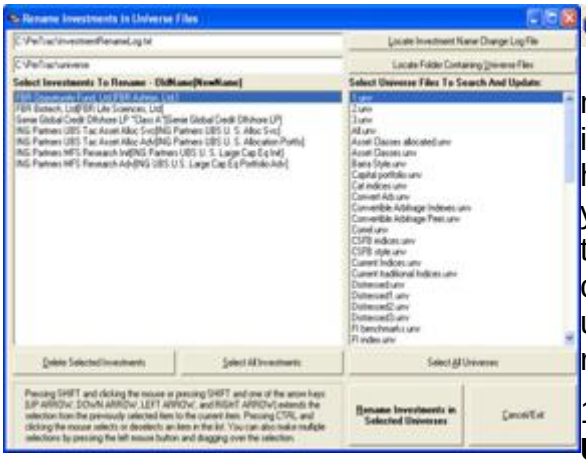
3. Back in the **Import Wizard**, if you have performed this operation before and have saved your original settings, you may select **Restore Previous Settings** and click **Finish**. Otherwise, select **Choose New Settings** and click **Next**.
4. In the **Locate Database** box, click **Locate** to select the database to which information will be written. Click **Next**.
5. In the **Choose Output Format** box, select either **Tab Delimited** or **Comma Delimited**.
6. The next six windows allow you to select the various tables to import and the files from which they will be read.
7. If you wish to save these merge settings for future use, click **Save Settings** and save the ".is" file.
8. Click **Finish** to begin the export process.
9. Once the import is complete, you will be given the option of viewing the error log, allowing you to verify that no errors occurred during the import.

Selecting Export from the File menu starts the Export Wizard, which allows you to export a PerTrac database to either a Tab Delimited or Comma Delimited (CSV) file for easy integration between spreadsheet applications, such as Excel.

1. If you have performed this operation before and have saved your settings, you may select **Restore Previous Settings** in the **Select Settings Option** box and click Finish. Otherwise, select **Choose New Settings** and click **Next**.
2. In the Locate Source Database box, click Locate to select the database from which information will be read.
3. In the Select Investment Source box, select either All Investments, to merge the entire database, or Universe to merge only a particular universe that you have created. If you select Universe, click **Locate** to select the universe you wish to use. Click **Next**.
4. In the **Choose Output Format** box, select either **Tab Delimited** or **Comma Delimited**.
5. The next six windows allow you to select the various tables to export and the files to which they will be written. Each table you wish to export will be saved as its own file with either a (.txt) or (.csv) extension. If you choose to export your performance table, you are given the option to export by column or by row. If you plan to use these files in a spreadsheet program, exporting by column will provides a more convenient display of the data. Also, if you plan to import this data back into a PerTrac database, you must export the information table by checking the Information Table box and selecting an output file name.
6. In the **Enter Date Range** box, enter the range of dates you wish to include. Click **Next**.
7. If you wish to save these merge settings for future use, click **Save Settings** and save the ".esf "file.
8. Click **Finish** to begin the export process.

9. Once the export is complete, you will be given the option of viewing the error log, allowing you to verify that no errors occurred during the merge.

Refer to the section: **Compacting Your Database.**



Occasionally, you or your data provider may change the name of an investment in your database. If your data provider has changed one of the Master Names, you will receive specific prompts during the merge process. Once the merge is complete, however, you will want to update the corresponding universes to reflect the changes.

1. **Select Rename Investment in Universe Files** from the **File** menu (this option is also available in the Tools menu in PerTrac).

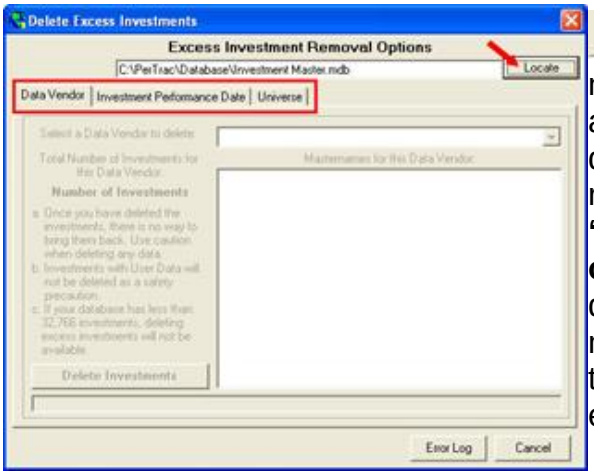
2. Once open, this window will display the contents of **InvestmentRenameLog.txt**. The log file will create a list in the left hand window showing the investment's Old Name [New Name].

3. Select the corresponding universes located in the right hand window.

4. Click **Rename Investment in Selected Universes** to update the name in the selected universes.

5. When finished, it is a good idea to remove the updated **Old Name [New Name]** investments from the log, unless you think you might need them later. To do so, highlight the names located in the left hand window and click **Delete Selected Investments**.

Refer to the section: **Validate Database.**



The maximum number of investments you can place in a PerTrac database is 32,766. If your database exceeds this limit you will receive the following error message: **"error in database list, subscript out of range"**. Exceeding the 32,766 limit does not happen often, however if you merge numerous large databases together there is a chance you will exceed the limit. If you exceed the limit

and receive the error message, the **Delete Excess Investments** options in Data Manager will allow you to delete records.

1. Open **Data Manager** by clicking **Start\Program Files\PerTrac 6.0\Data Manager.**
2. When the **Data Manager** window opens, click **File\Delete Excess Investments.** The **Delete Excess Investments** window will open.
3. The first step is to open the database that exceeds 32,766 investments. Click **Locate** to select your database.

NOTE: When you select your database, Data Manager will count the number of funds in that database. If your database contains less than 32,766 you will not be allowed to delete investments with this utility.

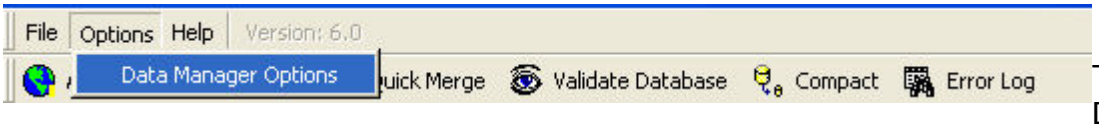
4. Provided your database exceeds the limit there are three **Excess Investment Removal** Options:

Data Vendor – This option allows you to delete records specific to a particular data vendor in your merged database.

Investment Performance Date –This option allows you to delete investments by **Start** or **End** dates.

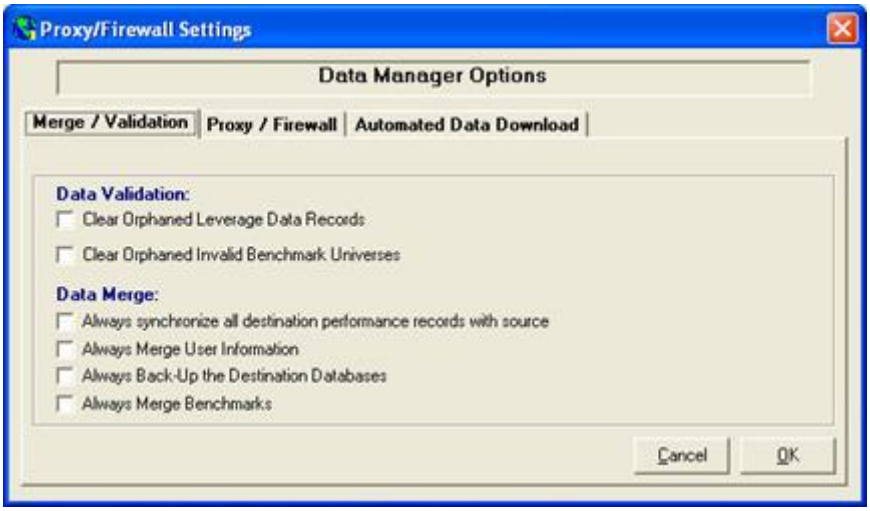
Universe – This option allows you to delete investments by universe.

8.05 - Data Manager Options Tab



The Data Manager Options consist of three tabs: **Merge/Validation, Proxy/Firewall and Automated Data Download.**

To access the **Data Manager Options** click the **Options** tab on the menu bar then select **Data Manager Options.** The Proxy/Firewall Settings window will appear.



Merge/Validation Tab

Data Validation: Contains two validation options for the **Validate Database** utility:

Clear Orphaned Leverage Records – If you have added leverage data for an investment to the leverage table located on the investment data window, and subsequently deleted the investment from the database, the leverage data may still exist as an orphaned record. Checking this validation option will remove the orphaned leverage data.

Clear Orphaned Invalid Benchmark Universes – If you have assigned benchmark universes to your funds and then removed either a benchmark from the assigned benchmark universe, or removed the investment the benchmarks were assigned to, you may have created orphaned investments. This option will remove these orphaned records during the validation process.

Data Merge: Contains four data merge options using the **Quick Merge** function.

1. Always synchronize all destination performance records with source- If your source database contains the same funds as your destination database, but the source contains longer performance histories or different data streams for any reason, you can synchronize the destination database with the source. The destination database data streams will be wiped out and replaced with the data streams from the source database. Select this option if you always want to synchronize with the source database.

2. Always Merge User Information – If you merge a source database that contains information that you entered in the **User Information, User Categories** or **User Memo** fields, and you always want to merge this data with the destination database, check this box.

NOTE: When you check this box on this Data Manager Options tab, it will automatically be checked in the Quick **Merge** window.

3. Always Back-up the Destination Database – Check this option if you want to backup your destination database (as a preventive measure) prior to merging. If something goes wrong during the merge you will have a backup of the original.

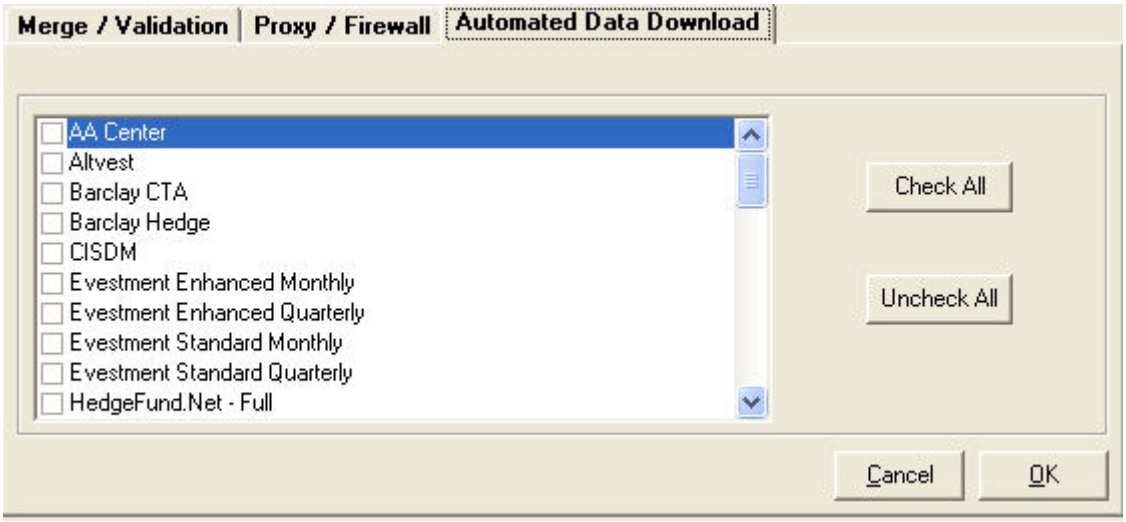
4. Always Merge Benchmarks – When you assign a benchmark universe to an investment that assigned benchmark universe and the investment become linked from a database standpoint. When you merge the database whose investments have assigned benchmark universes, this option will also merge your assigned benchmarks.

NOTE – This option should only be selected if all potential users who will be merging data, and want to merge benchmarks, are on the same network. There are files associated with assigning benchmark universes, and for this option to work between users, they must be sharing and mapped to the same network folders.

Proxy/Firewall

When updating your database with the Automated Data Update feature the Data Manager will access your server prior to downloading the data from our website. You may receive a Data Manager error that will prevent the process from completion due to your Firewall Security Settings or Proxy Settings. If you receive an error message, have your System Administrator enter the Firewall and/or Proxy Settings in this options window.

Automated Data Download



PerTrac's Data Manager contains an automated database update utility. To access the database update utility click the **Tools** tab on the PerTrac menu bar, and select the **Update Database** option. This will open the Auto Update and Merge window, which allows you to select up to five databases to download.

However, when you click the down arrow at the end of each database window, 42 database options appear in the list. These are the complimentary and subscription databases available for download.

We have added an option to the **Data Manager Options** tab that allows you to customize the drop-down list to show only the database(s) you download on a regular basis. If you purchase additional databases at some time in the future, those databases can easily be added to your list. To access the new optionclick the **Tools** tab and select **Update Database**. The **Auto Data Update and Merge** window will open. Click the **Options** tab on the menu bar and click **Data Manager Options**. Click on third tab to the right, **Automated Data Download.** This will open a window with a list of the 42 available databases for download. Each database has a check box located to the left of the name. Check the boxes for each of the databases you want in your custom list, then click **OK**. When you update your databases in the future, the only database names in the drop-down window will be the databases you selected in the options window.

Data Manager Help Tab

The help tab contains one option: **About Data Manager**. This window will indicate the current version of Data Manager. It also contains a link to the Data Manager online tutorials.

PerTrac Online Tutorials:

PerTrac 6.0 Upgrade: PerTrac 6.0 - Please Review Our New Features (28:29)

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1. Setting Your Default Folders (2:07)
2. Updating Your Software: Software Upgrades (3:41)
3. How to Create a Master Database (3:47)
4. Updating Your Data: Automated Update (9:27)
5. Merging Data with Data Manager (7:45)
6. How Do I Add an Investment? (Monthly Data Streams) (3:28)
7. How Do I Add an Investment? (Quarterly Data Streams) (7:18)
8. How Do I Update Investments I Have Added?: Monthly Data Entry Form (3:30)
9. Database Maintenance: Compacting and Validating (7:06)
10. Data Manager 6.0 Overview (3:20)

Section 2: Single Investment Analysis Tools

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2. Single Investment Information (6:55)
3. Single Investment Data (6:00)
4. Single Investment Statistics (12:40)
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Section 2a: Single Investment Reports

6. Investment Summary Reports (4:13)
7. PerTrac Publisher Overview (4:39)
8. PerTrac Publisher: Performance Measurement Report (6:47)

Section 3: Universe (Multiple-Investment) Analysis Tools

1. Universe Analysis Tools and Reporting Overview (3:18)
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Statistics Definitions

Value Added Monthly Index (VAMI) - This index reflects the growth of a hypothetical $1,000 in a given investment over time. The index is equal to $1,000 at inception. Subsequent month-end values are calculated by multiplying the previous month's VAMI index by 1 plus the current month rate of return.

Where Vami 0 = 1000 and
Where R_N = Return for period N

$$\text{Vami}_N = (1 + R_N) \times \text{Vami}_{N-1}$$

Average Return (Mean) - This is a simple average return (arithmetic mean) which is calculated by summing the returns for each period and dividing the total by the number of periods. The simple average does not take the compounding effect of investment returns into account.

Where N = Number of periods
Where R_I = Return for period I

$$\text{Average Return} = \left(\sum_{I=1}^{N} R_I \right) \div N$$

Average Gain (Gain Mean) - This is a simple average (arithmetic mean) of the periods with a gain. It is calculated by summing the returns for gain periods (return ≥ 0) and then dividing the total by the number of gain periods.

Where N = Number of periods
Where R_I = Return for period I
Where $G_I = R_I$ (IF $R_I \geq 0$) or 0 (IF $R_I < 0$)
N_G = Number of periods that $R_I \geq 0$

$$\text{Average Gain} = \left(\sum_{I=1}^{N} G_I \right) \div N_G$$

Compound (Geometric) Average Return - The geometric mean is the monthly average return that assumes the same rate of return every period to arrive at the equivalent compound growth rate reflected in the actual return data. In other words, the geometric mean is the monthly geometric return that, if applied each period, would give you a final VAMI (Growth of $1,000) index that is equivalent to the actual final VAMI index for the return stream you are considering. PerTrac calculates compound quarterly and annualized returns using the compound monthly return as a base.

Where N = Number of periods
Where $VAMI_0 = 1000$

Compound Monthly ROR = $\left(VAMI_N \div VAMI_0\right)^{1/N} - 1$

Compound Quarterly ROR = $\left(1 + \text{Compound Monthly ROR}\right)^3 - 1$

Compound Annualized ROR = $\left(1 + \text{Compound Monthly ROR}\right)^{12} - 1$

Standard Deviation - Standard Deviation measures the dispersal or uncertainty in a random variable (in this case, investment returns). It measures the degree of variation of returns around the mean (average) return. The higher the volatility of the investment returns, the higher the standard deviation will be. For this reason, standard deviation is often used as a measure of investment risk.

Where R_I = Return for period I
Where M_R = Mean of return set R
Where N = Number of Periods

$$M_R = \left(\sum_{I=1}^{N} R_I\right) \div N$$

Standard Deviation = $\left(\sum_{I=1}^{N} (R_I - M_R)^2 \div (N-1)\right)^{1/2}$

Annualized Standard Deviation

Annualized Standard Deviation = Monthly Standard Deviation $\times (12)^{1/2}$
Annualized Standard Deviation * = Quarterly Standard Deviation $\times (4)^{1/2}$

* Quarterly Data

Gain Deviation - Similar to standard deviation, except this statistic calculates an average (mean) return for only the periods with a **positive** return and then measures the variation of those returns from the gain mean. This statistic measures the volatility of upside performance.

Where N = Number of Periods
Where R_I = Return for period I
Where M_G = Gain Mean
Where $G_I = R_I$ (IF $R_I \geq 0$) or 0 (IF $R_I < 0$)
Where $GG_I = R_I - M_G$ (IF $R_I \geq 0$) or 0 (IF $R_I < 0$)
N_G = Number of periods that $R_I \geq 0$

$$M_G = \left(\sum_{I=1}^{N} G_I \right) \div N_G$$

$$\text{Gain Deviation} = \left(\sum_{I=1}^{N} (GG_I)^2 \div (N_G - 1) \right)^{1/2}$$

Loss Standard Deviation - Similar to standard deviation, except this statistic calculates an average (mean) return for only the periods with a **loss** and then measures the variation of those returns around the loss mean. This statistic measures the volatility of downside performance.

Where N = Number of Periods
Where R_I = Return for period I
Where M_L = Loss Mean
Where $L_I = R_I$ (IF $R_I < 0$)or 0 (IF $R_I \geq 0$)
Where $LL_I = R_I - M_L$ (IF $R_I < 0$) or 0 (IF $R_I \geq 0$)
N_L = Number of periods that $R_I < 0$

$$M_L = \left(\sum_{I=1}^{N} L_I \right) \div N_L$$

$$\text{Loss Deviation} = \left(\sum_{I=1}^{N} (LL_I)^2 \div (N_L - 1) \right)^{1/2}$$

Downside Deviation - Similar to the loss standard deviation except the downside deviation considers only returns that fall below a defined Minimum Acceptable Return (MAR) rather then the arithmetic mean. For example, if the MAR is assumed to be 10%, the downside deviation would measure the variation of each period that falls below 10%. (The loss standard deviation, on the other hand, would take only losing periods, calculate an **average** return for the losing periods, and then measure the variation between each losing return and the losing return **average**). There are three downside deviation calculations: (1) MAR (Minimum Acceptable Return) which is entered on **Preferences** menu; (2) the risk free rate you entered on the **Preferences** menu; (3) zero.

Where R_I = Return for period I
Where N = Number of Periods
Where R_{MAR} = Period Minimum Acceptable Return
Where $L_I = R_I - R_{MAR}$ (IF $R_I - R_{MAR} < 0$)or 0 (IF $R_I - R_{MAR} \geq 0$)

$$\text{Downside Deviation} = \left(\left(\sum_{I=1}^{N} (L_I)^2 \right) \div N \right)^{1/2}$$

Semi Deviation – Measures the variance of returns below the average (mean) return for a data series.

Where R_I = Return for period I
Where N = Number of Periods
Where M = Period Arithmetic Mean
Where $L_I = R_I - M$ (IF $R_I - M < 0$)or 0 (IF $R_I - M \geq 0$)
Where N_L = Number of Periods where $R_I - M < 0$

$$\text{Semi Deviation} = \left(\left(\sum_{I=1}^{N} (L_I)^2 \right) \div (N_L - 1) \right)^{1/2}$$

Sharpe Ratio - The Sharpe Ratio is a return per unit of risk measure developed by William Sharpe. Return (numerator) is defined as the incremental average return of an investment over the risk free rate. Risk (denominator) is defined as the standard deviation of the investment returns.

Where R_I = Return for period I
Where M_R = Mean of return set R
Where N = Number of Periods
Where SD = Period Standard Deviation
Where R_{RF} = Period Risk Free Return

$$M_R = \left(\sum_{I=1}^{N} R_I \right) \div N$$

$$SD = \left(\sum_{I=1}^{N} (R_I - M_R)^2 \div (N - 1) \right)^{1/2}$$

Sharpe Ratio = $\left(M_R - R_{RF} \right) \div SD$

Annualized Sharpe Ratio

Annualized Sharpe = Monthly Sharpe $\times (12)^{1/2}$

Annualized Sharpe = Quarterly Sharpe $\times (4)^{1/2}$

Sterling Ratio - This is a return/risk ratio. Return (numerator) is defined as the Compound Annualized Rate of Return over the last 3 years. Risk (denominator) is defined as the Average Yearly Maximum Drawdown over the last 3 years less an arbitrary 10%. To calculate this average yearly drawdown, the latest 3 years (36 months) is divided into 3 separate 12-month periods and the maximum drawdown is calculated for each. Then these 3 drawdowns are averaged to produce the Average Yearly Maximum Drawdown for the 3 year period.

Where D1 = Maximum Drawdown for first 12 months
Where D2 = Maximum Drawdown for next 12 months
Where D3 = Maximum Drawdown for latest 12 months

Average Drawdown = (D1 + D2 + D3) ÷ 3

Sterling Ratio = Compound Annualized ROR ÷ ABS ((Average Drawdown – 10%))

Drawdown - A Drawdown is any losing period during an investment record. It is defined as the percent retrenchment from an equity peak to an equity valley. A Drawdown is in effect from the time an equity retrenchment begins until a new equity high is reached. (i.e. In terms of time, a drawdown encompasses both the period from equity peak to equity valley (**Length**) and the time from the equity valley to a new equity high (**Recovery**).

Maximum Drawdown is simply the largest percentage drawdown that has occurred in any investment data record.

The Drawdown Table in PerTrac 2000 provides a comprehensive list of all drawdowns in the historical performance record ranked from largest to smallest.

Gain to Loss Ratio - This is a simple ratio of the average gain in a gain period divided by the average loss in a losing period. Periods can be monthly or quarterly depending on the data frequency.

Gain/Loss Ratio = ABS (Average Gain in Gain Period ÷ Average Loss in Loss Period)

Gain to Loss Ratio - This is a simple ratio of the average gain in a gain period divided by the average loss in a losing period. Periods can be monthly or quarterly depending on the data frequency.

Gain/Loss Ratio = ABS (Average Gain in Gain Period ÷ Average Loss in Loss Period)

$ Profit to Loss Ratio - This ratio combines the Gain to Loss Ratio with the ratio of the percentage of profitable periods to the percentage of losing periods. Since this ratio considers both the average size and the frequency of winning and losing periods, it tells you the historical ratio of dollars earned in the investment to dollars lost. For example, a $ Profit to Loss Ratio of 2.5 means that historically the investment earned $2.50 of profit for each $1.00 of risk taken.

$ Profit/Loss Ratio = (% Profitable Periods ÷ % Losing Periods) × Gain to Loss Ratio

Correlation Analysis - All of the following correlation related statistics use the following variables:

Where R_I = the return of the independent variable for period I

Where RD_I =the return of the dependent variable for period I

Where M_R = the mean return of the independent variable

Where M_{RD} = the mean return of the dependent variable

Where N = Number of Periods

Beta - Beta is the slope of the regression line. Beta measures the risk of a particular investment relative to the market as a whole (the "market" can be any index or investment you specify). It describes the sensitivity of the investment to broad market movements. For example, in equities, the stock market (the independent variable) is assigned a beta of 1.0. An investment which has a beta of .5 will tend to participate in broad market moves, but only half as much as the market overall.

$$\textbf{Beta} = \left(\sum_{I=1}^{N} (R_I - M_R)(RD_I - M_{RD})\right) \div \left(\sum_{I=1}^{N} (R_I - M_R)^2\right)$$

Alpha - Alpha is a measure of value added. It is the Y intercept of the regression line.

$$\textbf{Alpha} = M_{RD} - \text{Beta} \times M_R$$

Annualized Alpha – Annualized Alpha is the annualized value of Alpha.

$$\textbf{Annualized Alpha} = ((1 + \text{Alpha})^{12} - 1 \qquad \text{(Monthly Data)}$$

$$\textbf{Annualized Alpha} = ((1 + \text{Alpha})^{4} - 1 \qquad \text{(Quarterly Data)}$$

Correlation and Correlation Coefficient - Correlation measures the extent of linear association of two variables. The Coefficient of Determination (R^2) is a measure of how well the regression line fits the data (variation explained by the regression line). Unexplained variation is simply 1- R^2.

Correlation Coefficient (r)

Where S_{XY} = Sample Covariance
Where S_X = Standard deviation of independent variable
Where S_Y = Standard deviation of dependent variable

$$S_{XY} = \left(\sum_{I=1}^{N} (R_I - M_R)(RD_I - M_{RD})\right) \div (N - 1)$$

$$S_X = \left(\sum_{I=1}^{N} (R_I - M_R)^2 \div (N - 1)\right)^{1/2}$$

$$S_Y = \left(\sum_{I=1}^{N} (RD_I - M_{RD})^2 \div (N - 1)\right)^{1/2}$$

Correlation Coefficient = $S_{XY} \div (S_X \times S_Y)$

Coefficient of Determination (r^2)

Where Y_I = Alpha + Beta x R_I

Coefficient of Determination = $\left(\sum_{I=1}^{N} (Y_I - M_{RD})^2\right) \div \left(\sum_{I=1}^{N} (RD_I - M_{RD})^2\right)$

Kurtosis - Kurtosis characterizes the relative peakedness or flatness of a distribution compared with the normal distribution. Positive kurtosis indicates a relatively peaked distribution. Negative kurtosis indicates a relatively flat distribution.

Where N = Number of Periods
Where R_I = Return for period I
Where M_R = Mean of return set R
Where SD = Period Standard Deviation

$$M_R = \left(\sum_{I=1}^{N} R_I\right) \div N$$

$$SD = \left(\sum_{I=1}^{N} (R_I - M_R)^2 \div (N - 1)\right)^{1/2}$$

Kurtosis = $\left\{\left(N(N+1) \div ((N-1)(N-2)(N-3))\right) \left(\sum_{I=1}^{N} (R_I - M_R) \div SD\right)^4\right\} - \left(3(N-1)^2 \div ((N-2)(N-3))\right)$

If there are fewer than four data points, or if the standard deviation of the sample equals zero, Kurtosis returns the N/A error value.

Tracking Error (Annualized) - Tracking Error is a measure of the unexplained portion of an investments performance relative to a benchmark. Annualized Tracking Error is measured by taking the square root of the average of the squared deviations between the investment's returns and the benchmark's returns, then multiplying the result by the square root of 12.

$$\textbf{Tracking Error} = \left(\left(\sum_{I=1}^{N} (R_I - RD_I)^2 \div (N-1) \right)^{1/2} \right) \times 12^{1/2}$$

Treynor Ratio – The Treynor Ratio, developed by Jack Treynor, is similar to the Sharpe Ratio, except that it uses Beta as the volatility measurement. Return (numerator) is defined as the incremental average return of an investment over the risk free rate. Risk (denominator) is defined as the Beta of the investment returns relative to a benchmark. In PerTrac 2000, the user enters the value for the risk free rate.

Where M_R = Annualized Return of Investment
Where R_{RF} = Annualized Risk Free Return

$$\textbf{Treynor Ratio} = \left(M_R - R_{RF} \right) \div \textbf{Beta}$$

Jensen Alpha - The Jensen Alpha, developed by Michael Jensen, quantifies the extent to which an investment has added value relative to a benchmark. The Jensen Alpha is equal to the Investment's average return in excess of the risk free rate minus the Beta times the Benchmark's average return in excess of the risk free rate. In PerTrac 2000, the user enters the value for the risk free rate.

Where R_I = Benchmark Return for period I
Where RD_I = Return for period I
Where M_R = Mean of return set R (Benchmark)
Where M_{RD} = Mean of return set RD
Where N = Number of Periods
Where R_{RF} = Period Risk Free Return

$$M_R = \left(\sum_{I=1}^{N} R_I \right) \div N$$

$$M_{RD} = \left(\sum_{I=1}^{N} RD_I \right) \div N$$

$$\textbf{Jensen Alpha} = \left(M_{RD} - R_{RF} \right) - \textbf{Beta} \times \left(M_R - R_{RF} \right)$$

Sortino Ratio - The Sortino ratio is another return per unit of risk measure developed by Frank Sortino. Return (numerator) is defined as the incremental compound average period return over a Minimum Acceptable Return (MAR). Risk (denominator) is defined as the Downside Deviation below a Minimum Acceptable Return (MAR). Just as with the Downside Deviation there are three Sortino ratio calculations: (1) MAR (Minimum Acceptable Return) which is entered on **Preferences** menu; (2) the risk free rate you entered on the **Preferences** menu; (3) zero.

Where R_I = Return for period I
Where N = Number of Periods
Where R_{MAR} = Period Minimum Acceptable Return
Where DD_{MAR} = Downside Deviation
Where $L_I = R_I - R_{MAR}$ (IF $R_I - R_{MAR} < 0$)or 0 (IF $R_I - R_{MAR} \geq 0$)

$$DD_{MAR} = \left(\left(\sum_{I=1}^{N} (L_I)^2\right) \div N\right)^{1/2}$$

Sortino Ratio = (Compound Period Return – R_{MAR}) ÷ DD_{MAR}

Annualized Sortino Ratio

Annualized Sortino = Monthly Sortino × $(12)^{1/2}$

Annualized Sortino = Quarterly Sortino × $(4)^{1/2}$

Active Premium - A measure of the Investment's annualized return minus the Benchmark's annualized return.

Active Premium = Investment's annualized return - Benchmark's annualized return.

Information Ratio - The Information Ratio is the Active Premium divided by the Tracking Error. This measure explicitly relates the degree by which an Investment has beaten the Benchmark to the consistency by which the Investment has beaten the Benchmark.

Information Ratio = Active Premium ÷ Tracking Error

Up Capture - The Up Capture Ratio is a measure of the Investment's compound return when the Benchmark was up divided by the Benchmark's compound return when the Benchmark was up.

Where R_I = Return for period I
Where RD_I = Benchmark Return for period I
Where N = Number of Periods
Where $L_I = R_I$ (IF $RD_I \geq 0$) or 0 (IF $RD_I < 0$)
Where $LD_I = R_{DI}$ (IF $RD_I \geq 0$) or 0 (IF $RD_I < 0$)

$$\mathbf{T} = \left((1+L_0) \times (1+L_1) \times \ldots \times (1+L_N)\right) - 1$$

$$\mathbf{TD} = \left((1+LD_0) \times (1+LD_1) \times \ldots \times (1+LD_N)\right) - 1$$

Up Capture = T ÷ TD

Down Capture - The Down Capture Ratio is a measure of the Investment's compound return when the Benchmark was down divided by the Benchmark's compound return when the Benchmark was down.

Where R_I = Return for period I
Where RD_I = Benchmark Return for period I
Where N = Number of Periods
Where $L_I = R_I$ (IF $RD_I < 0$) or 0 (IF $RD_I \geq 0$)
Where $LD_I = RD_I$ (IF $RD_I < 0$) or 0 (IF $RD_I \geq 0$)

$$\mathbf{T} = \left((1+L_0) \times (1+L_1) \times \ldots \times (1+L_N)\right) - 1$$

$$\mathbf{TD} = \left((1+LD_0) \times (1+LD_1) \times \ldots \times (1+LD_N)\right) - 1$$

Down Capture = T ÷ TD

Up # - The Up Number Ratio is a measure of the number of periods that the Investment was up, when the Benchmark was up, divided by the number of periods that the Benchmark was up.

Where R_I = Return for period I
Where RD_I = Benchmark Return for period I
Where N = Number of Periods
Where L_I = **1** (IF $R_I \geq 0$ **AND** $RD_I \geq 0$) **ELSE** 0
Where LD_I = **1** (IF $RD_I \geq 0$) **ELSE** 0

$$T = \sum_{I=1}^{N} (L_I)$$

$$TD = \sum_{I=1}^{N} (LD_I)$$

Up Number Ratio = T ÷ TD

Down # - The **Down Number Ratio** is a measure of the number of periods that the Investment was down when the Benchmark was down, divided by the number of periods that the Benchmark was down.

Where R_I = Return for period I
Where RD_I = Benchmark Return for period I
Where N = Number of Periods
Where L_I = **1** (IF $R_I < 0$ **AND** $RD_I < 0$) **ELSE** 0
Where LD_I = **1** (IF $RD_I < 0$) **ELSE** 0

$$T = \sum_{I=1}^{N} (L_I)$$

$$TD = \sum_{I=1}^{N} (LD_I)$$

Down Number Ratio = T ÷ TD

Up % - **The Up Percentage Ratio** is a measure of the number of periods that the Investment outperformed the Benchmark when the Benchmark was up, divided by the number of periods that the benchmark was up.

Where R_I = Return for period I
Where RD_I = Benchmark Return for period I
Where N = Number of Periods
Where L_I = **1** (IF $R_I \geq RD_I$ **AND** $RD_I \geq 0$) **ELSE** 0
Where LD_I = **1** (IF $RD_I \geq 0$) **ELSE** 0

$$T = \left(\sum_{I=1}^{N} L_I\right)$$

$$TD = \left(\sum_{I=1}^{N} LD_I\right)$$

Up Percentage Ratio = T ÷ TD

Down % - **The Down Percentage Ratio** is a measure of the number of periods that the Investment outperformed the Benchmark when the Benchmark was down, divided by the number of periods that the benchmark was down.

Where R_I = Return for period I
Where RD_I = Benchmark Return for period I
Where N = Number of Periods
Where L_I = **1** (IF $R_I \geq RD_I$ **AND** $RD_I < 0$) **ELSE** 0
Where LD_I = **1** (IF $RD_I < 0$) **ELSE** 0

$$T = \left(\sum_{I=1}^{N} L_I\right)$$

$$TD = \left(\sum_{I=1}^{N} LD_I\right)$$

Down Percentage Ratio = T ÷ TD

% Gain - The Percent Gain Ratio is a measure of the number of periods that the Investment was up divided by the number of periods that the Benchmark was up.

Where R_I = Return for period I
Where RD_I = Benchmark Return for period I
Where N = Number of Periods
Where L_I = **1** (IF $R_I \geq 0$) **ELSE** 0
Where LD_I = **1** (IF $RD_I \geq 0$) **ELSE** 0

$$T = \left(\sum_{I=1}^{N} L_I\right)$$

$$TD = \left(\sum_{I=1}^{N} LD_I\right)$$

Percent Gain Ratio = T ÷ TD

Calmar Ratio - This is a return/risk ratio. Return (numerator) is defined as the Compound Annualized Rate of Return over the last 3 years. Risk (denominator) is defined as the Maximum Drawdown over the last 3 years. If three years of data are not available, the available data is used. ABS is the Absolute Value.

Calmar Ratio= Compound Annualized ROR ÷ ABS (Maximum drawdown)

Frequently Asked Questions (FAQ)

What do statistics shown in the color blue signify?

The color blue is somewhat of a red flag. Statistics and performance measures shown in blue indicate a situation the user must be made aware of. There are two areas in PerTrac where you might find statistics in blue: Investment Statistics and Universe Statistics.

(1) **Investment Statistics:** There are two tables located in the Investment Statistics window where you will frequently see statistics in blue: (a) “Date”, “Return”, “Vami” and “To Date” table located in the upper right. The color blue in this table indicates that the monthly return(s) are coded as estimates; (b) Benchmark Analysis table on the lower right. The Benchmark Analysis table contains correlation statistics and capture ratios relative to selected benchmarks. The color blue in this table indicates the statistics are not being calculated over the date range shown at top of the Investment Statistics window.

TIP: To see the date range on which the statistics in blue are being calculated on, use the Benchmark Analysis table scroll bar. If you scroll to the right you will find two columns labeled “Start” and “End” indicating the date range.

(2) **Universe Statistics-Correlation Analysis:** The universe statistics window contains a number functions to analyze a universe of investments. When utilizing these functions, PerTrac by defaut, will set the start and end dates to equal the common start and end dates for each of the investments. However, there may be instances where the user will change the start and end dates beyond the common date range. When the date ranges are changed and the user then selects Convert Portfolio to Investment, Statistics, Charts, Pro Forma, Efficient Frontier Optimizer or Linear Optimizer, a window appears prompting you to make a decision as to how you want PerTrac to handle the uneven date ranges.

TIP: There is one tab, Correlation Analysis, which will calculate the statistics over any date range you select. The Correlation Analysis will create a matrix, such as a correlation matrix, on many statistics. To calculate these statistics, a common date range between each of the investments must be used for the regression. When the matrix has been generated the color blue is used to indicate the correlations are not being calculated over the date range shown on the universe allocation page, but the common date range between the pairs of investments being correlated.

How do I optimize funds with short performance histories?

An issue that arises frequently with PerTrac users is that of optimizing a universe of investments that contain funds with a short date range. The Efficient Frontier Optimizer requires a common start and end for the investments being optimized.

When your universe contains new funds with short date ranges, your optimization period will be restricted to the shorter date range. For example, if you had a universe of ten funds, nine of which have five years of data and one with six months of data, the optimization period will be restricted to six months. If you wish to proceed with the optimization you will have to make a decision regarding this issue. There are five possible solutions to this situation.

1. Replace the investment restricting the date range with an appropriate benchmark proxy that has a longer data history.

2. Back-fill the investment data stream with a benchmark's data. This option would keep the short history of data for the investment and back-fill the remaining history with an appropriate, highly correlated benchmark.

Note: To back-fill the investment data make a duplicate of the original, click Investment Data to open the investment's data sheet, insert rows above the investment's first data point, and then enter the dates and performance for the benchmark.

3. Select the PerTrac option to automatically back-fill the investment data with zeros or a risk free rate. This option will have the greatest impact on skewing the return, standard deviation and correlation of the investment when generating the efficient frontier.

4. Select a PerTrac option to back-fill the data with a zero prior to generating the efficient frontier and then change the inputs when you enter the efficient frontier setup window.

Note: This option willl, initially, back-fill the investment's data with zeros or a risk free rate which will be reflected in the annualized return, standard deviation, and correlation to the other investments. However, you can then change the three inputs when the efficient frontier setup winodw opens. To do so, click the Advanced Setup button on the lower left. When the Advanced Setup window appears, click the Risk/Return and Allocations tab to change the return and standard deviation for the investment. You could enter the return and standard deviation the investment actually achieved over its short data range, or enter a return and standard deviation that more closely represents the strategy or asset class over a longer term date range. Next, click the Correlation Matrix tab to change the correlations between the investment and the other investments in the universe.

Tip: To locate the actual return and standard deviation for the investment over its date range, highlight the investment and click Investment Statistics at the Home window. The return and standard deviation can be found in the Risk Table. To view the correlations over the investment's date range, click the Correlation Analysis tab on the universe statistis window. The default date range will be the date range of this investment. When the correlation analysis window opens the default setting is Correlation R. Click OK. Once you have the return, standard deviation and correlation numbers, enter them on the efficient frontier advanced setup window.

5. Remove the investment from the universe.

Data Manager: Most Frequently Asked Question (FAQ)

We receive numerous calls regarding a message that appears after you update your data with the Updated Database feature. The message: ***"Automated Data Update could not compact your database which could be because you have that database open in PerTrac or in MS Access. Please compact your database on a regular basis through PerTrac. If you have the database open in PerTrac then please reload your Master Universe to see the changes".*** This message is not an error, but a notification message that the database could not be compacted because it is open in PerTrac when the download is taking place. The update has completed. Close the message window down, as well as the data manager window. When you are back to the PerTrac home window click the Load Master Universe button located on the left. That will reset your database to reflect the update.

Note: If, however, there is a critical error below that message, the download did not take place. The common causes generating the critcial errors include proxy settings, firewall settings or an incorrect license number. If you receive an error message contact our tech support at (775) 851-5880.

The "View" button

We are frequently asked by clients for the quickest way to export a fund name, contact name, contact phone number, and email address on a universe of funds. This can be achieved by way of the **View** button located on the PerTrac tool bar. The **View** button has two drop-down options: **View Universe** & **View Database**. Selecting the **View Universe** option will allow you to produce four columns of fields on any universe currently open in the Home window. This would also include the entire database. The View Universe option will allow you to export a total four information fields from the Investment Information **General** tab. To

export the information fields, open the universe at the PerTrac Home window. Click **View** on the menu bar and select **View Universe**. The Universe View window contains four boxes with a drop-dwon arrow at the end of each window. Click the down arrow to select the information fields. Once your selections have been made, double right-click on the table. The workbook designer window will open. Highlight the table, copy it, and paste it to Excel.

Tip: The View Universe option will allow you to export one to four information fields only. If you wish to export more than four information page fields on a universe of funds, create and export a PerTrac Reports template to Excel.

Note: The **View Database** option will allow you to view all of the fields on the Investment Information **General** tab in a Microsoft Access table for your entire database. However, unlike the **View Universe** option which can be exported to Excel, the **View Database** option is just that, a table for viewing only. You do not have the ability export this data to Excel.

PerTrac Tips & Tricks

How do I optimize funds with short performance histories?

An issue that arises frequently with PerTrac users is that of optimizing a universe of investments that contain funds with a short date range. The Efficient Frontier Optimizer requires a common start and end for the investments being optimized. When your universe contains new funds with short date ranges, your optimization period will be restricted to the shorter date range. For example, if you had a universe of ten funds, nine of which have five years of data and one with six months of data, the optimization period will be restricted to six months. If you wish to proceed with the optimization you will have to make a decision regarding this issue. There are five possible solutions to this situation.

1. Replace the investment restricting the date range with an appropriate benchmark proxy that has a longer data history.

2. Back-fill the investment data stream with a benchmark's data. This option would keep the short history of data for the investment and back-fill the remaining history with an appropriate, highly correlated benchmark.

Note: To back-fill the investment data make a duplicate of the original, click Investment Data to open the investment's data sheet, insert rows above the investment's first data point, and then enter the dates and performance for the benchmark.

3. Select the PerTrac option to automatically back-fill the investment data with zeros or a risk free rate. This option will have the greatest impact on skewing the return, standard deviation and correlation of the investment when generating the efficient frontier.

4. Select a PerTrac option to back-fill the data with a zero prior to generating the efficient frontier and then change the inputs when you enter the efficient frontier setup window.

Note: This option willl, initially, back-fill the investment's data with zeros or a risk free rate which will be reflected in the annualized return, standard deviation, and correlation to the other investments. However, you can then change the three inputs when the efficient frontier setup winodw opens. To do so, click the Advanced Setup button on the lower left. When the Advanced Setup window appears, click the Risk/Return and Allocations tab to change the return and standard deviation for the investment. You could enter the return and standard deviation the investment actually achieved over its short data range, or enter a return and standard deviation that more closely represents the strategy or asset class over a longer term date range. Next, click the Correlation Matrix tab to change the correlations between the investment and the other investments in the universe.

Tip: To locate the actual return and standard deviation for the investment over its date range, highlight the investment and click Investment Statistics at the Home window. The return and standard deviation can be found in the Risk Table. To view the correlations over the investment's date range, click the Correlation Analysis tab on the universe statistis window. The default date range will be the date range of this investment. When the correlation analysis window opens the default setting is Correlation R. Click OK. Once you have the return, standard deviation and correlation numbers, enter them on the efficient frontier advanced setup window.

5. Remove the investment from the universe.

PerTrac Reports - Peer Group Analysis

The Advanced version of PerTrac contains a very robust peer group analysis module for analyzing and ranking funds relative to their peers and benchmarks. The Standard version of PerTrac does not include the peer analysis module, however, that does not necessarily mean you can't perform peer group analysis. All versions of PerTrac include the PerTrac Reports universe report generator. What most users are not aware of is that PerTrac Reports has the ability to create peer analysis charts on any performance and risk statistic available in the column selection window. The following steps will walk you through creating peer analysis charts with PerTrac Reports.

Step 1: Launch PerTrac Reports from the Reports tab on the PerTrac menu bar.

Step 2: The PerTrac Reports upper menu bar contains a window to select the report type. The default selection is "Columnar-Multi Manager". If you click the down arrow on that window a second report option "Peer Group Analysis" can be selected.

Step 3: Open an existing template or create a new template of statistics the peer group analysis chart will contain. Enter the date range. Note: the peer group analysis option requires a fixed start and end date. The "Since inception" & "End of Data" options are not available for this chart.

Step 4: Locate the peer universe. Click the "Universe" button located on the right hand side of the upper menu bar. When the Universe Selection window appears, select the Peer Universe you will be ranking your fund against and click OK.

Step 5: Select the "Comparative Investments" universe to plot on the peer chart. After the peer universe has been selected, click "Generate Report" located on the upper right hand side of the upper menu bar, and then select Excel. The Generate Report window will appear verifiying the universe you just selected. Click Yes. The Peer Group Analysis window will open which contains the "Enter

Universe Name for Comparative Investments" universe selection. This is the universe of investments that will be plotted on the bar chart. Click "Locate" on the upper right to select your universe. Now locate the default chart file. The window below the "Enter Chart Template for Comparative Investment Plot" should contain the path to the default chart file. If the window is blank, click the Locate button at the end of the window. The correct file path is C:\PerTrac\PeerGroupTemplate[Defalut].vtc. The last option is to "Enter Percentile Chart Preference". The options include: Decile, Quintile, Quartile and Quartile [95%-5%], which will determine how the bar chart is formatted. When all selections have been made, click OK.

Step 6: Generate the report. After clicking OK in Step 5, the Excel Export Setup window will appear. Select Empty Excel Workbook, Leave Excel Open and check the Fomat Output option. Then click Generate Report. An Excel spreadsheet will open which will contain the output for each fund in the two universes. In addition to the Excel spreadsheet a Peer Analysis bar chart, plotting your investments relative to the peer universe, will also be created.

What do statistics shown in the color blue signify?

The color blue is somewhat of a red flag. Statistics and performance measures shown in blue indicate a situation the user must be made aware of. There are two areas in PerTrac where you might find statistics in blue: Investment Statistics and Universe Statistics.

(1) **Investment Statistics:** There are two tables located in the Investment Statistics window where you will frequently see statistics in blue: (a) "Date", "Return", "Vami" and "To Date" table located in the upper right. The color blue in this table indicates that the monthly return(s) are coded as estimates; (b) Benchmark Analysis table on the lower right. The Benchmark Analysis table contains correlation statistics and capture ratios relative to selected benchmarks. The color blue in this table indicates the statistics are not being calculated over the date range shown at top of the Investment Statistics window.

TIP: To see the date range on which the statistics in blue are being calculated on, use the Benchmark Analysis table scroll bar. If you scroll to the right you will find two columns labeled "Start" and "End" indicating the date range.

(2) **Universe Statistics-Correlation Analysis:** The universe statistics window contains a number functions to analyze a universe of investments. When utilizing these functions, PerTrac by defaut, will set the start and end dates to equal the common start and end dates for each of the investments. However, there may be instances where the user will change the start and end dates beyond the common date range. When the date ranges are changed and the user then selects Convert Portfolio to Investment, Statistics, Charts, Pro Forma, Efficient Frontier Optimizer or Linear Optimizer, a window appears prompting you to make a decision as to how you want PerTrac to handle the uneven date ranges.

TIP: There is one tab, Correlation Analysis, which will calculate the statistics over any date range you select. The Correlation Analysis will create a matrix, such as a correlation matrix, on many statistics. To calculate these statistics, a common date range between each of the investments must be used for the regression. When the matrix has been generated the color blue is used to indicate the correlations are not being calculated over the date range shown on the universe allocation page, but the common date range between the pairs of investments being correlated.

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Increased Speed: The Linear Optimization module has been completely rewritten for increased efficiency and will now complete the optimization in a fraction of the time it took in previous versions of PerTrac. In the past, if you were optimizing seven or more assets a message appeared stating that the optimization could take forever. That message will no longer appear. You will also no longer have to set tight constraints or increase the allocation increment, both of which helped speed up the optimization. You can now run the optimization unconstrained, select the allocations to change in increments of 25 bps and have the results in seconds.

Custom Reports: We have added a PerTrac Publisher style report generator to the linear optimizer. There is now a “Report” tab located on the Linear Optimizer setup window. If you are running the most current version of PerTrac you will now have a new template, “MasterLinearOptimizationReport.xls”, in the C:\PerTrac\Custom Reports folder. This is similar to the PerTrac Publisher master reports that allow the user to create custom templates. This new file will contain the linear optimization allocation table, scatterplot chart, inputs and all other optimization output.

Technical support & Training

PerTrac Financial Solutions provides complimentary technical support and training to all PerTrac clients. You may contact our technical support staff by email or phone.

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